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SEPTEMBER 1953 50 CENTS

APPROPRIATION HIGHLIGHTS FOR FISCAL 1954 — Page 5

NORTHWEST'S LEFT-OVER WOODPILES — Page 8

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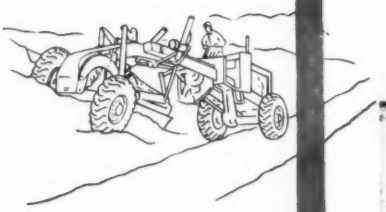

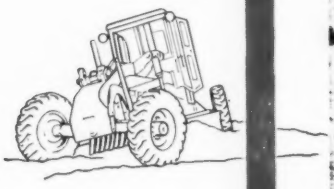

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Volume 59
No. 9
September, 1953

American FORESTS

James B. Craig, Editor
Dorothy B. Thompson, Editorial Assistant
Keith R. McCarthy, Assistant Editor
James J. Fisher, Art Director

PUBLISHED BY THE AMERICAN FORESTRY ASSOCIATION

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COVER • *Camera study of "Monkeypod Tree"*

THE AFA

The American Forestry Association, publishers of AMERICAN FORESTS, is a national organization—independent and non-political in character—for the advancement of intelligent management and use of forests and related resources of soil, water, wildlife and outdoor recreation. Its purpose is to create an enlightened public appreciation of these resources and their part in the social and economic life of the nation. Created in 1875, it is the oldest national forest conservation organization in America.

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AMERICAN FORESTS is published monthly by The American Forestry Association at 919 Seventeenth Street, N. W., Washington, D. C. Subscription price $5 a year. Editors are not responsible for loss or injury of manuscripts and photographs while in their possession or in transit. The Editors are not responsible for views expressed in signed articles. Entered as second-class matter at the Postoffice at Washington, D. C., under the Act of March 3, 1879. Acceptable for mailing at special rate of postage provided in Section 1103, Act of October 3, 1917, authorized July 10, 1918. Additional entry at Baltimore, Md., December 29, 1931. Copyright, 1953, by The American Forestry Association.

Letters

Science on the Stump

EDITOR:

Your article "Science on the Stump" in the July issue of AMERICAN FORESTS was quite interesting. The procedure you describe may prove to be quite helpful to us. Can you advise me where the Bennett peeling spud or the McLeod girdler may be obtained and their approximate cost. Also, is there any particular mix or concentration of sodium arsenite used? Any further information that you can give on the above questions would be very much appreciated.

Lucian A. Moebus
Vice Admiral, U.S. Navy (Ret.)
Lighterknot Creek Farms
Opp, Alabama

EDITOR:

I have read your article "Science on the Stump" in the recent issue of AMERICAN FORESTS with much interest . . . Some years ago, before I retired from active business, I did some experimental work with sodium arsenite for the control of weeds on railroad right of way with good results but the maintenance people seemed afraid to use it.

Both Mrs. Tyson and myself are regular readers of AMERICAN FORESTS and as we now have several acres of mountain land are doing some experimental work on getting rid of the sucker growth around the stumps of some of the cutover land.

All best wishes for the continued success of AMERICAN FORESTS.

Thomas H. Tyson
Highlands, North Carolina

An Open Mind

EDITOR:

I have just received and read your editorial in the July issue of AMERICAN FORESTS, "Is An Open Mind Contrary to the Public Interest?" I think you have done an extremely difficult job very well! Congratulations.

J. J. Storrow
Marblehead, Mass.

EDITOR:

The editorial in the July issue of AMERICAN FORESTS, entitled "Is An Open Mind 'Contrary to the Public Interest'?", appears to contain implications that the Association is adopting a strange new policy relative to conservation on federal lands. At least an interpretation would appear to be needed regarding some of the wording of that editorial.

The first sentence of the fourth paragraph of that editorial states:

"Substance of Mr. Granger's comments is that he is fearful The American Forestry Association is playing with dynamite in placing trust in the states to conduct a proper study of their own lands."

Just when did these federal lands become "their own lands" of the states?

If a study of the national forests is to be made, it must take into consideration the overall conservation requirements of the nation, in which case it is logical to assume that the interests of all the people

of the nation will be better served by a national commission than would be the case under individual surveys by state groups much more susceptible to local pressures. Such a national commission should include representatives of the various groups whose interests are involved, should provide adequate time for field studies, and should consider all aspects pertinent to such a study, but the overall national conservation interests should predominate. The final result should provide for the closest coordination and cooperation between the federal, state and private interests in welding together the best attainable national program.

The last half of paragraph five of the editorial reads as follows:

"For public lands, whether under crown or republic, are an anachronism, and unless all groups can be educated to the intrinsic importance of multiple use in terms of all of us, raids on our national forests are likely to increase, rather than diminish, in intensity as the pressures of population and other pressures continue to mount."

It would seem that the latter portion of this statement contradicts the first part, for how could "the intrinsic importance of multiple use in terms of all of us" be better demonstrated than under federal ownership?

What is your definition of "public lands" and why are public lands an anachronism? One might gain the impression that the Association is recommending that all public lands should be turned over to private interests.

These statements in this editorial do not appear to correspond with the statement in the resolution of January 30 that "The essential integrity of these federal properties must be preserved as part of our basic national policy."

If the officers of the Association have decided upon a new policy and objective for the organization, does such a change meet with the concurrence of a majority of the membership? Perhaps a referendum in this regard is desirable.

John D. Coffman
Consulting Forester
Oakland, California

EDITOR:

I have just read your active and progressive editorial "Is An Open Mind 'Contrary to the Public Interest'?" May I add my personal "Amen" to your stand on the situation.

I worked for the Forest Service for almost 20 years and believe it is and has been a great organization. However, I am now inspecting private logging operations at the rate of many hundreds a year. Of course I am not now working for the Forest Service, but I know and understand its problems and limitations.

If I could just take one of your men into the field on inspections for one week to show him what a detrimental effect is being obtained by the Forest Service's idealistic and impractical policies of timber management (in some phases), I'm sure you would feel very much assured that your "open mind" and need for "state by state review" stand is definitely needed.

The overall abuse resulting from too much unrealistic and idealistic management makes an experienced forester and public servant shudder and hang his "professional head" in shame.

Buel B. Hunt
Redding, California

(Turn to page 47)

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By ALBERT G. HALL

FEDERAL APPROPRIATIONS FOR FORESTRY AND RELATED activities fall somewhat short of the budget presented by former President Truman and of the revised budget presented by President Eisenhower. Although a few increases were effected in specific items, the federal conservation agencies will have to get along on less money for their regular activities than was available to them in fiscal year 1953. (See table on facing page.)

REDUCTIONS IN APPROPRIATIONS, HOWEVER, WILL NOT necessarily mean a lessening of effective conservation activities. The administration has indicated, and the appropriations committees have endorsed the idea, that states and private forest landowners should begin to assume more of costs and direction of protection, development and utilization programs. A study of the increases and decreases shows that with few exceptions an attempt has been made to provide adequately, but not lavishly, for the management of that portion of the forest resource that is in federal ownership; and to continue but not to increase, federal cooperation in activities that may be best handled by states and private owners.

THE FEDERAL AID PROGRAMS WILL RECEIVE A CAREFUL ANALYSIS by the newly authorized Commission on Intergovernmental Relations which will help determine the extent to which it is desirable to extend, curtail, or retain federal participation in state and local programs. In the meantime, the Congress has provided for maintaining these activities at or near their current levels.

EVEN WHERE REDUCTIONS HAVE BEEN MADE, there is some likelihood that later in the year the Congress will approve supplemental appropriations. The reports of the appropriations committees indicate that it may be desirable later to increase the funds for timber access roads in the national forests and for detection and control activities under the Forest Pest Control Act. These two items are interrelated, for, the only practical measure of control in the case of the insect-infested, dead and dying timber in the old growth stands of the Northwest appears to be prompt salvage operations and early removal of susceptible trees of poor vigor.

ACQUISITION OF ADDITIONAL LANDS FOR NATIONAL FORESTS appears to be temporarily halted, with only the usual $75,000 appropriation for rounding out boundaries and purchase of interior holdings under the Weeks Act. The authority to utilize receipts, under special acts, for land acquisition has been withheld. In addition to this being an economy measure, it may be looked upon also as an indicator that the Congress has not turned a deaf ear to the numerous proposals that a complete study be made of federal landownership and acquisition plans. However, the principal land acquisition programs of the government are no longer designed to acquire forest lands for national forest or park purposes, but rather the "miscellaneous" acquisition activities of other agencies. Among these are the military establishments, atomic energy activities, and the various agencies engaged in dam construction, power development and delivery of power.

(Turn to page 28)

HIGHLIGHTS OF APPROPRIATIONS FOR FISCAL YEAR 1954

Department	F. Y. 1953 Appropriation	1954 Budget Request Truman	1954 Budget Request Eisenhower	Public Law 156
DEPARTMENT OF AGRICULTURE				
Forest Service				
N. F. Protection & Mgt.	$29,919,361	$31,253,700	$29,820,700	$29,715,700
Fighting Forest Fires	6,000,000	6,000,000	6,000,000	6,000,000
Forest Research	5,402,300	5,562,300	5,429,000	5,350,000
(Forest & Range)	(3,255,134)	(3,330,154)	(3,290,134)	(3,210,834)
(Forest Products)	(1,231,318)	(1,281,318)	(1,231,218)	(1,231,218)
(Resource Investigations)	(915,848)	(915,848)	(907,848)	(907,848)
Forest Roads & Trails	16,071,958[a]	11,267,000	21,021,000[a]	14,500,000
(Construction)	(9,100,000)	(4,100,000)	(14,099,042[a])	(7,528,042)
(Maintenance)	(6,900,000)	(6,900,000)	(6,900,000)	(6,900,000)
(Flood Prevention)	(71,958)	(267,000)	(21,958)	(71,958)
Acquisition				
Weeks Act	75,000	75,000	.....	75,000
Superior N. F.	150,000	.....	.....	.....
Special Acts	141,680[b]	141,680[b]	.....	.....
Coop. Range Improvements	310,000[b]	531,000[b]	531,000[b]	531,000[b]
State-Pri. Forestry Coop.	10,864,484	10,978,000	10,764,000	10,792,708
(Fire Control)	(9,449,500)	(9,449,500)	(9,449,500)	(9,449,500)
(Tree Planting)	(447,061)	(447,000)	(447,000)	(447,061)
(For. Mgt. & Processing)	(633,904)	(633,904)	(633,800)	(633,904)
(Farm For. Extension)	(107,543)	(107,835)	(88,000)	(107,543)
(General For. Coop.)	(154,700)	(154,700)	(129,700)	(154,700)
(Flood Prevention)	(71,776)	(185,000)	(16,000)	.....
Indefinite & Special[c]	26,351,587	28,276,587	28,276,587	28,276,587
Control of Forest Pests				
Forest Pest Control Act	3,350,000	3,350,000	3,350,000	2,300,000
White Pine Blister Rust	3,299,434	4,000,000	3,300,000	3,000,000
(National Forests)	(1,750,000)	(2,150,000)	(1,750,000)	(1,590,000)
(Bur. Ent.—State & Pri.)	(363,000)	(663,000)	(363,000)	(268,000)
(Dept. of Interior)	(504,952)	(505,000)	(505,000)	(460,000)
(Bur. Ent. Leadership)	(681,482)	(682,000)	(682,000)	(682,000)
Flood Prevention	5,719,833	15,566,000	7,000,000	7,000,000
Bureau of Plant Industry				
Forest Diseases	499,000	599,000	579,000	579,000
National Arboretum	149,000	225,000	200,000	174,000
Bureau of Entomology & Plant Quarantine				
Forest Insect Investigation	465,600	465,600	465,600	465,600
Gypsy & Browntail Moth	519,000	526,600	526,600	526,600
Watershed Protection[d]	.....	.....	.....	5,000,000
Soil Conservation Service	61,844,014	65,806,000	59,640,000	60,944,014
Water Conservation Projects	425,500	685,000	685,000	685,000
★	★	★	★	
INTERIOR DEPARTMENT				**Public Law 172**
Bureau of Land Mgt.				
Mgt. Lands & Resources	$11,060,000	$12,985,000	$11,746,000	$11,483,000
Construction	2,750,000	2,100,000	2,000,000	2,000,000
(Range Improvement)	(360,292)	(380,000)	(380,000)	(380,000)
Indian Affairs				
Resources Mgt.	13,253,760	16,504,080	15,535,000	
National Park Service	33,162,330	40,019,000	36,169,000	34,070,850
(Mgt. & Protection)	(8,786,550)	(10,000,000)	(9,945,000)	(8,786,550)
Fish and Wildlife	13,196,821	13,545,000	12,968,000	12,125,400
Bur. of Reclamation	206,447,991	231,188,000	177,350,000	142,699,660
★	★	★	★	
INDEPENDENT OFFICES				**Public Law 149**
Tenn. Valley Authority	336,027,000	254,355,000	190,822,000	188,546,000
Resources Development	2,488,000	2,627,000	2,300,000	1,350,000

[a]—*Includes $5,000,000 in Third Supplemental, 1953.*
[b]—*From receipts.*
[c]—*School payments, brush disposal, road & trail funds, payments to states, etc., from receipts.*
[d]—*To provide for 50 "pilot plant" operations to test upstream facilities.*

Dr. Detlev W. Bronk, Noted Scientist, to Keynote Forest Congress

Dr. Bronk

DR. DETLEV W. BRONK, president of the Rockefeller Institute for Medical Research, the American Association for the Advancement of Science, and the Academy of Science, will make the keynote address at the Fourth American Forest Congress called by The American Forestry Association October 29-31 in Washington, D. C. Dr. Bronk, a former president of Johns Hopkins University, will speak on the subject, "Forestry in the World Resource Picture." His address is scheduled for Thursday morning, October 29, and will coincide with appearances by the President of the United States and the Secretaries of Agriculture and the Interior.

Noted internationally for his work in biophysics, Dr. Bronk became president of Johns Hopkins in 1949 succeeding the late Isaiah Bowman. He resigned this post in June of this year to become head of the Rockefeller Institute for Medical Research. In recognition of his leadership in scientific research and development, former President Truman, in 1950, appointed Dr. Bronk to the executive committee of the National Science Foundation to advise the federal government on defense problems. He was born in New York City in 1897 and is a graduate of Swarthmore College.

With Dr. Bronk scheduled as keynote speaker for the first national "town meeting" of forestry since 1946, plans are now going forward for a well-integrated program based on the agenda prepared by representative resources leaders at Higgins Lake, Michigan, in June. Hardy L. Shirley, chairman of the program committee, has announced that "approximately an hour will be provided at each of the sessions for prepared statements by individuals or organization representatives who make written request for Congress time by September 15th.

"All requests for Congress time should be addressed to The American Forestry Association, 919 17th Street, N. W., Washington 6, D. C.," Dean Shirley said. "Assignments will be made allowing from three to eight minutes per speaker. Allotment of this time for the various sessions will be made by the program committee on October 1 and will depend on the scope of the statements and the number of representatives or individuals requesting time."

Keynote speakers and a panel of specialists will head up sessions scheduled on forest land management, multiple use of forest lands, forestry research and education, and forest landownership.

As announced by Lowell Besley, executive director-forester of The American Forestry Association, the schedule for the three-day meeting will be:

THURSDAY, October 29 — 9:30 a.m., Over-All Opportunities and Aims of Congress including opening remarks by the President of the United States, and short talks by the Secretaries of Agriculture and the Interior, a representative of the Canadian government, a representative of industry, and Dr. Bronk's keynote address.

THURSDAY, 2:00 p.m. — Forest Land Management. Keynote address on subject, "Opportunities and Goals for Forest Management." Panel discussion on "Opportunities for Extending and Intensifying Wise Forest Management," including forest protection, forest planting and forest practices.

FRIDAY, October 30—9:00 a.m., Multiple Use of Forest Lands. Keynote address on "Opportunities for Improving Multiple Use." Panel on "Opportunities and Goals for Multiple Uses," with special reference to Water, Wildlife Management and Recreation.

FRIDAY, 1:30 p.m. — Forestry Research and Education. Keynote address on the topic, "Opportunities for Strengthening Research and Education." Panel on "Opportunities in Research and Education."

SATURDAY, October 31 — 9:00 a.m., Forest Landownership. Keynote talk on "Desirable Patterns of Forest Landownership. Panel on the subject, "Viewpoints on Forest Landownership," including Federal, State and Community, Industrial, and Small Private Tracts. The Congress will conclude with a summary of the three-day meeting at 11:45 a.m.

EDITORIAL

MINORITY REPORT AT HIGGINS LAKE

One basic requirement in the preparation and adoption of any workable program is that all points of view be clearly defined and fairly presented. Now that members of The American Forestry Association have had an opportunity to study the recommendations for forestry as adopted by the majority of delegates at Higgins Lake, Michigan, it might prove advantageous—in pointing toward the Congress next month—to elaborate on minority viewpoints that were brought forward in the discussion on specific topics. Two of these conflicting viewpoints are presented here in the interest of keeping the membership fully informed.

Control of Destructive Practices

One minority criticism leveled at the proposed program is that the 1953 statement in regard to state regulatory laws governing destructive forestry practices is "considerably weaker than the one approved by the 1946 Congress." This group stated, "in our opinion, this is a mistake for past experience with state regulatory laws indicates that such laws are an effective working tool in obtaining better forest practices, and on their record deserve a wider trial than have heretofore been given. We would like to see the 1953 statement worded at least as strongly as the 1946 statement."

For the convenience of members in studying this problem, the 1946 program said in part, "To stop forest destruction, reliance should not be placed solely upon voluntary and cooperative action." The program then urged "Requirements by state law that forest owners avoid unnecessary destruction of growing stock and young growth and follow practices that will maintain continuous forest production on lands not to be devoted to other uses."

The Higgins Lake recommendation of 1953 states, on the other hand, that "Needed controls should be developed state-by-state as local conditions and forest practices require." The specific recommendation for control of destructive practices then recommends "The development of state policies, methods or laws by the people of each state to avoid unnecessary destruction of growing stock and young growth and to assure practices that will maintain continuous production on forest lands."

Forest Landownership

Most clear-cut difference of opinion that developed at Higgins Lake concerned a proposed survey of public lands to determine a desirable pattern of future landownership. The conference was in general agreement that such a study should be made. But two principal schools of thought emerged in discussing what group, or agency, is best qualified to make such a study.

Proponents of the first school said, in effect, "Let's put this study where it belongs from the start—in the hands of the proper Congressional committees. A commission or special committee should be set up. It should be composed of representatives from the House and Senate Interior and Insular Affairs and Agriculture and Forestry Committees. To implement this work, early action by the governors of each state is recommended in appointing committees to study the ownership pattern in their home areas. The old line committees in the House and Senate can be depended on to conduct a competent study. Moreover, the prospect for enactment of any remedial legislation recommended by the study would be far brighter if the study originated in the Congress in the first place, for the legislative branch of the government today is being given full consideration by the administration on all questions of broad policy."

Proponents of the second school denied that any great amount of legislative action would be required upon completion of the study. "Most of the corrective measures required," this group said, "would be of an executive rather than a legislative nature. Then too, with Congress already congested by studies of every type, why risk the injection of 'politics' into a study that must be completely impartial. Obviously, there is only one logical answer. That is to have the more than 100-year-old and widely respected National Academy of Science do the job. Academy guidance would insure a scientifically-accurate study based on the historical relationships of forestry to the nation. The Academy has made similar studies in the past. Furthermore, it would be a study in which the public would have full confidence."

Advocates of the Congressional study implemented by state surveys won this test at Higgins Lake by a vote of 15 to ten. Dr. Wilson Compton was one of the most articulate spokesmen for this school of thought. He was supported in his thinking by representatives of industry and the Forest Service. Spokesmen for the Academy approach, on the other hand, included Colonel W. B. Greeley, Ovid Butler, Tom Wallace, Dr. Ira N. Gabrielson and Lloyd Partain.

So here are two issues hand-tailored for the October Congress—issues that will be reopened for further discussion and debate. The membership of the Association will most certainly have opinions to present on these proposals and the place to present them is at the Congress.

Left-Over Woodpiles of Washington

By W. B. GREELEY

THE yearly crop of wood still unused in the sawmills and logging camps in the state of Washington, as disclosed by the survey of 1947, would bury the national capitol building under a pyramid as high as the Washington Monument. If converted into kraft paper, it would wrap all of our Christmas packages for the next 50 years. If hydrolized into wood sugar, it could produce 125 million gallons of ethyl alcohol.

Happily this enormous pile of unwanted wood has been shrinking a bit every year as more and more industries nibble away at it. It has probably shrunk a good fifth since we began preparations for World War II. The lumber demanded for war cantonments, crating and dunnage, and then for housing, has taken to the sawmills many short and low-grade logs that used to be left in the woods. Resourceful loggers have even worked over old slashings and snag patches. They salvage short, clear chunks for peeling into veneer, "pee-wee" sawlogs, and thousands of cords of useful pulpwood.

New technologies are constantly digging into Washington's wood pile. It has become the No. 1 state in the production of pulp. Chips from waste wood are not only cooked at every pulp mill in the state, they are often ground into fiber by machines working on the ancient principle of an upper and nether millstone. The synthetic board, made from trillions of tiny wood fibers pressed and molded into sheets, now comes out from one part of a mill whose head-saw may be cutting virgin logs into battleship decking. Some fiber boards are thick and soft, for insulation. Some are thin and hard, for sheathing buildings. Some are combined with plywood on building paper in "sandwich" panels. And some, called "acoustic tile," are treated and pierced, like cribbage boards, for interior finish to deaden sound.

In the last world war, a refugee from Nazi ruthlessness brought to the United States the Scholler process of converting waste wood into industrial alcohol. A war production plant at Springfield, Oregon proved out this process with a yield of 55 gallons of alcohol from a ton of Douglasfir sawdust or shavings. The refuse woods of the West Coast can float a couple of Uncle Sam's battleships in alcohol when the national economy needs it. This source of fuel, food, and rubber may have special importance as we again face the realities of national existence.

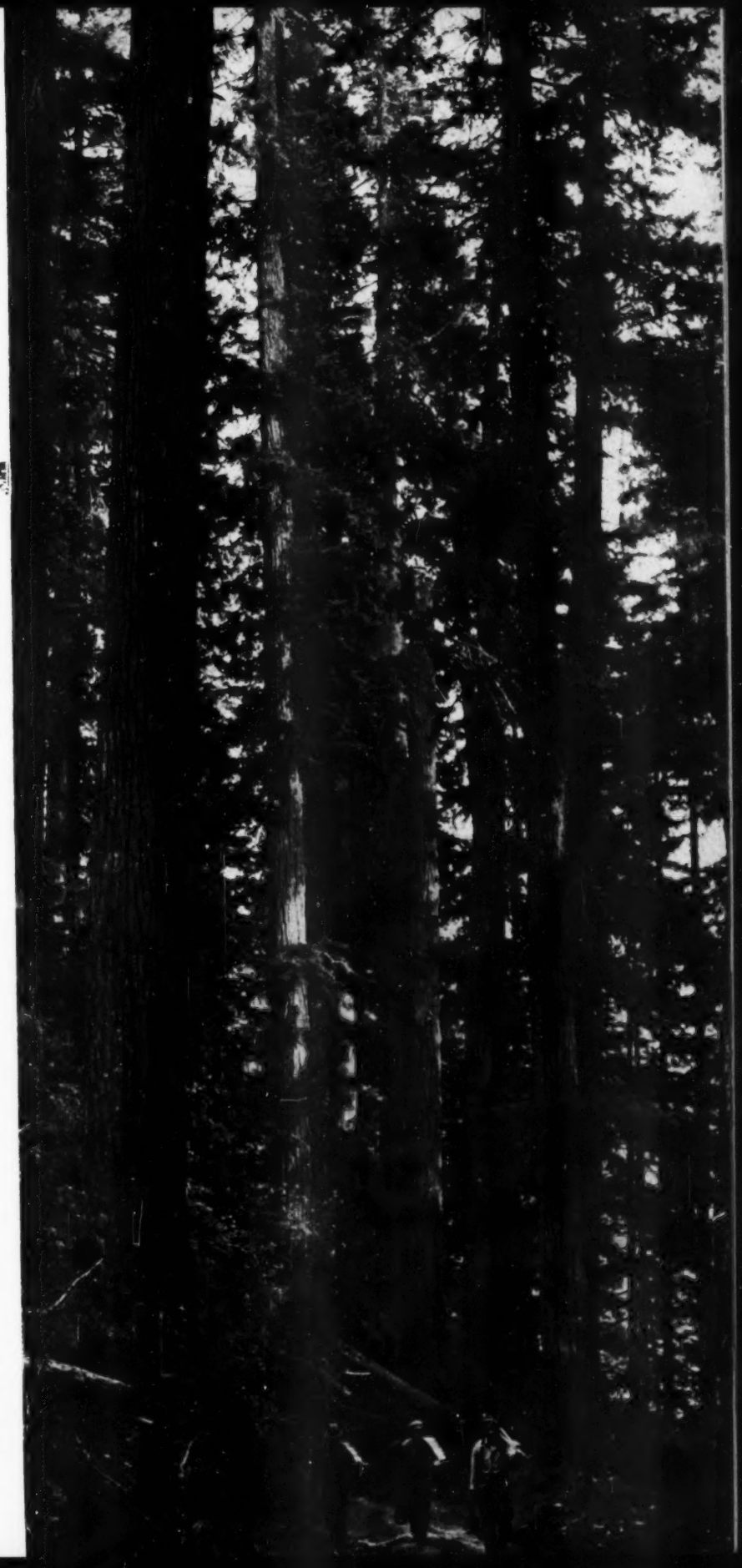
Another necessity of war days led to a new industry. Shortage of cork from the Mediterranean started the shredding of Douglasfir bark, to recover its thin layers of little corky flakes. One company ended up by processing whole bark into fiber, plastic powder and fertilizer. And so the very dregs of forest waste were converted to human use.

But while shrinking perceptibly from time to time, the pile of wood wastes and left-overs in Washington is still of astronomical proportions. It is the state's greatest industrial challenge. When the legislature set up a Commission on Forest Products in 1945, the attack on the wood pile became its No. 1 job. The Commission organized a state-wide survey of unused woods. Twelve districts covering natural economic units of transportation and manufacture were marked out on the east and west sides of the Cascades. Survey

Northwest industry is meeting the challenge of how to utilize an annual pile of unused wood large enough to bury the U. S. Capitol Building under a pyramid many hundreds of feet high

crews sampled the slashings left in every major logging operation and got the best records to be had of mill wastes at sawmills, plywood factories and wood-working plants. This new-style timber cruising has been assembled and printed on a forest-industry map of Washington. The figures are broken down by species, sizes and qualities of wood—from the sawdust and shavings of a planing mill to the big chunks of defective cedar or hemlock left in the woods. One item of special interest is the volume of tall slim poles standing thickly in 30- and 40-year junior forests. Most of these overcrowded woods should be thinned of surplus trees before they die in nature's race for survival.

It is all useful wood; wood accessible to roads and going logging shows; wood of the kind now manufactured wherever there is a market to take it and a plant to use it. And it added up, in 1947, to 210 million cubic feet available every year—a continuing crop of raw material waiting for industry to harvest it. Over half of this wood is logging slash; the left-overs after saw timber has been cut under usual practices. In the thickest stands of Douglasfir, the wood left behind the logger runs up to 30 cords an acre. The unused mill wastes, the slabs and edgings and trimmings, the sawdust and shavings also make up a respectable wood pile of their own. They could



pour 46 million cubic feet a year into the bins of new pulp or fiber or wood-sugar plants.

From the days of John McLaughlin's sawmill, built by the Hudson Bay Company in 1823, West Coast forest industry has struggled under a great over-burden of useless wood. Sitting on a log 45 years ago, I heard a gloomy tale from an old Columbia River timber cruiser. "No use tallying this cursed hemlock," he said. "No logging boss will touch it ceptin' an extra big clear trunk." The patches of second growth were all classed as "brush" by this census taker of the woods. But he would count the half-mature trees of "bastard fir." "No floorin' or finish in it; but good stout timber," he said.

For many years, the West Coast lumber mills existed precariously by muscling into eastern markets with the choicest grades cut from virgin logs. They alone could repay the freight haul across the continent. The leavings in the woods appalled every lumberman or forester from other states or other lands. The most conspicuous feature of every sawmilling community was a cluster of huge black waste burners, whose ascending columns of smoke by day and of sparks by night seemed to rise like perpetual incense to some Moloch of savage exploitation. At a meeting of distressed lumbermen in the 20's I heard an operator from Wisconsin complain of the low-grade logs he had to leave in the woods because the glutted market would not repay the cost of sawing them. The dean of the Douglasfir contingent closed the argument by remarking that an average acre of Northwest logging slash contained more wood than any acre of eastern forest ever grew. At that, it is doubtful if all the left-overs from pioneer western logging and milling ever caught up with the wastage of virgin timber rotting on the stump from old age and over-ripeness.

The greatest progress of forest industry in the Pacific Northwest from decade to decade has been its slow gains in mastering the vast surplus of marginal raw material. This is the real measure of stability, of community service, and of industrial forestry. The markets for wood created by new industries, by the pulp and plywood mills, by the fiber-board and chemical plants, influence directly what the logger and forester can do in their woods. The hemlock which was the despair of my old cruising friend is now a principal source of rayon yarn, the second textile in national consumption. Giant beams, stronger than the solid timbers sawed from virgin logs, are made today by gluing one- and two-inch boards together. The integrated manufacture of many different things under one management, of lumber, plywood and kraft pulp from the same tree, if you will, makes the waste from one product raw material for another. And every new use of wood, for textiles or paper or plastics or ersatz hamburger, puts a stronger economic footing under permanent forest management. The wood technician calls the tune for the forester.

All of which may point up the interest which Washington forest men take in the piles of idle wood still lying around our state or rising skyward every fall in the smoke of our slash fires. We need more pulp and fiber mills, more plastic and chemi-

Logging show where only sawlogs and peelers have been taken; fifteen cords of good pulpwood left

Mastering the vast surplus of marginal raw material would give the Northwest real measure of stability

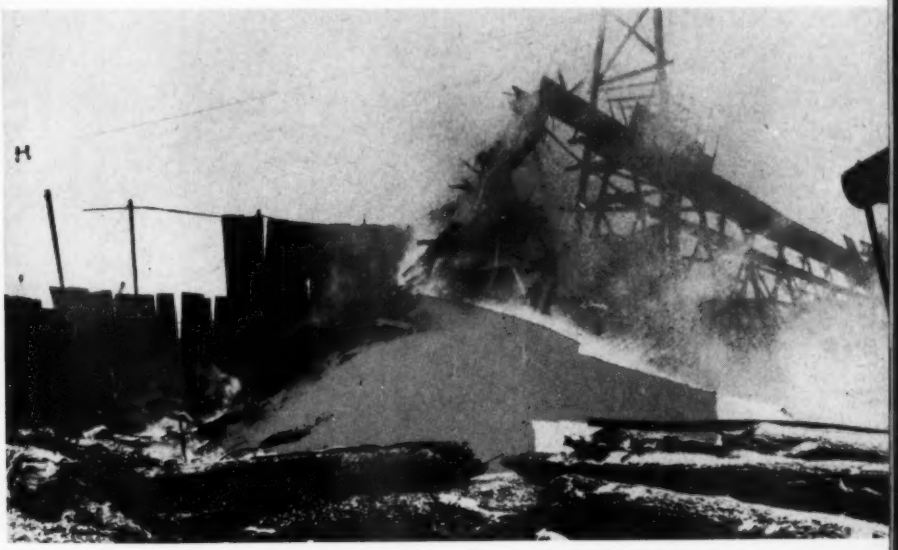
cal plants, to use all that our forests grow and to convert these waste piles into production and payrolls.

There is a sawmill in the Okanogan Valley which well illustrates why all the people of Washington have a stake in the complete use of our timber crop. This mill saws 50 million feet of pine logs every year; but, except for its own community, has no lumber to sell. Every board is cut or glued or laminated into a knocked-down casket, a window frame or sash, a table or chair, a kitchen cabinet, an ironing board or any one of a dozen other things for everyday use. Every scrap of wood goes into something. The latest device of these resourceful millwrights is a special sawing rig for utilizing the forest weed of the West, the lodgepole pine whose little trees clothe millions of acres in our high country. Lodgepole billets, 90 inches long and 4½ inches or thicker at the top end, tumble down onto a moving chain cradle, and are split and resplit into little boards by a thin, fast horizontal band saw. They emerge from the plant edge-glued into panels and casket parts or laminated into squares and then turned on a lathe into piano legs.

The most impressive thing about this plant is not the mechanical marvel of its machines but its army of skilled workers. From every thousand feet of logs felled in its woods, it creates more than double the man-hours of labor at the usual western sawmill of the old style.

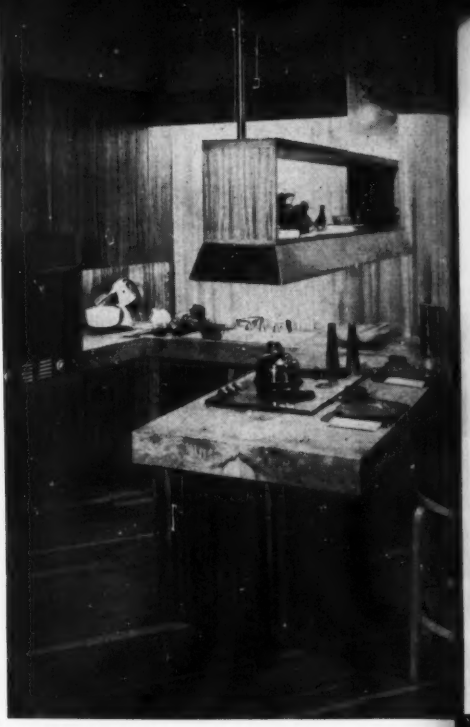
Employment is one of the riches hidden in the unused wood piles of Washington. The average West Coast logging camp and green lumber mill employ seven or eight year-round workers for each million feet of timber felled in the woods. Wood pulp and plywood industries employ still more people on the same unit of raw material. And integrated operations, making pulp or fiber board and factory items along with lumber and plywood, are employing 20 year-long workers on each million feet of timber taken from the forest. Three times the payroll from the same tree!

It is small wonder that the legislature and governor of Washington have taken the lead in measuring wood piles and blue-printing their industrial opportunities. The union of intensive wood use with systematic timber growing gives our state promise of a lasting forest economy. It will be still strong and growing when the colorful hey-day of virgin timber and ox teams is forgotten.



Too many waste burners at small sawmills are still turning good raw material into smoke, ashes

A WORLD OF HARDWOODS



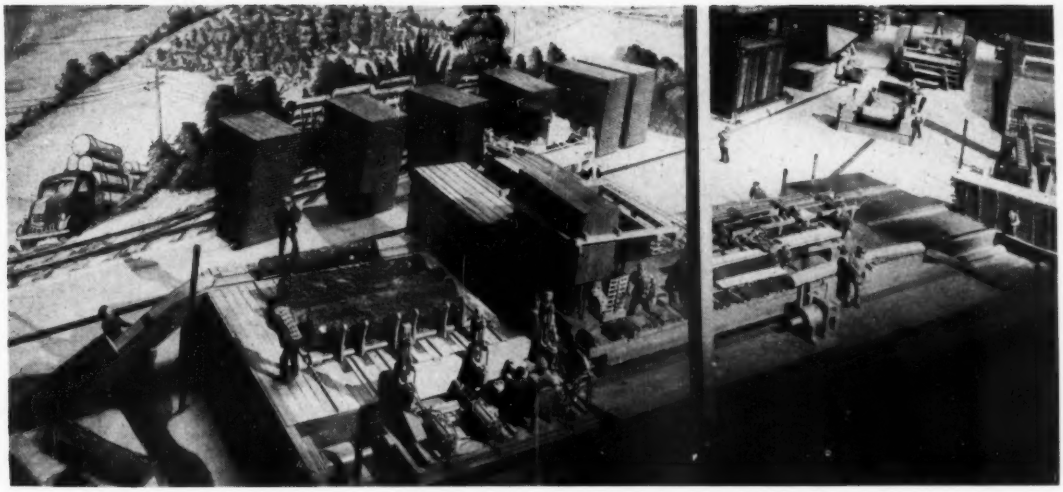
Exhibit's handsome kitchen features extensive use of hardwoods in easy-to-care-for, softly-striped paneling

THE BEAUTY of forests and forest products and the need for forest conservation are dramatized in a new exhibit opened recently at Chicago's world-famous Museum of Science and Industry. One of the largest exhibits in the museum, visited yearly by more than two million people, the new attraction is called "A World of Hardwoods."

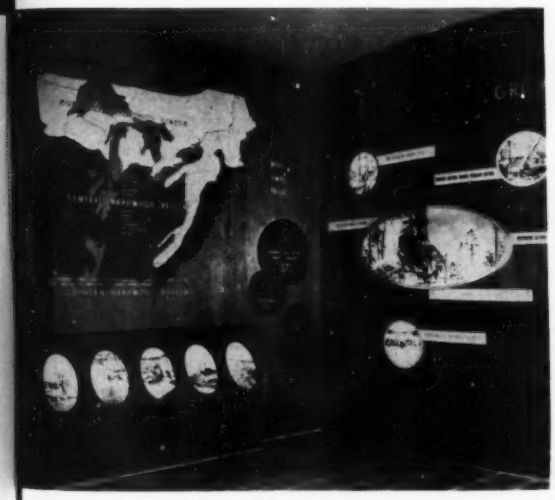
A feature of the exhibit is a vivid presentation of the near-miracle of growing trees. This is done with a realistic replica of a stately white oak and a recording which explains how a hardwood tree lives and grows. A portion of the tree has been cut away to show the heartwood and sapwood. Giant magnifying glasses set with photomicrographs give close-ups of the wood structure. Three giant colored translites on the wall use drawings and photomicrographs to show root, wood and leaf structure in great detail.

Forming a realistic backdrop for the "living tree" is a composite photomural showing, in one continuous sweep, scenes from northern, central, Appalachian, southern bottomland and delta-area hardwood forests. Each type of tree is labeled with common and botanical names. Other sections of the exhibit cover all phases of the hardwood industry, from forest to finished product.

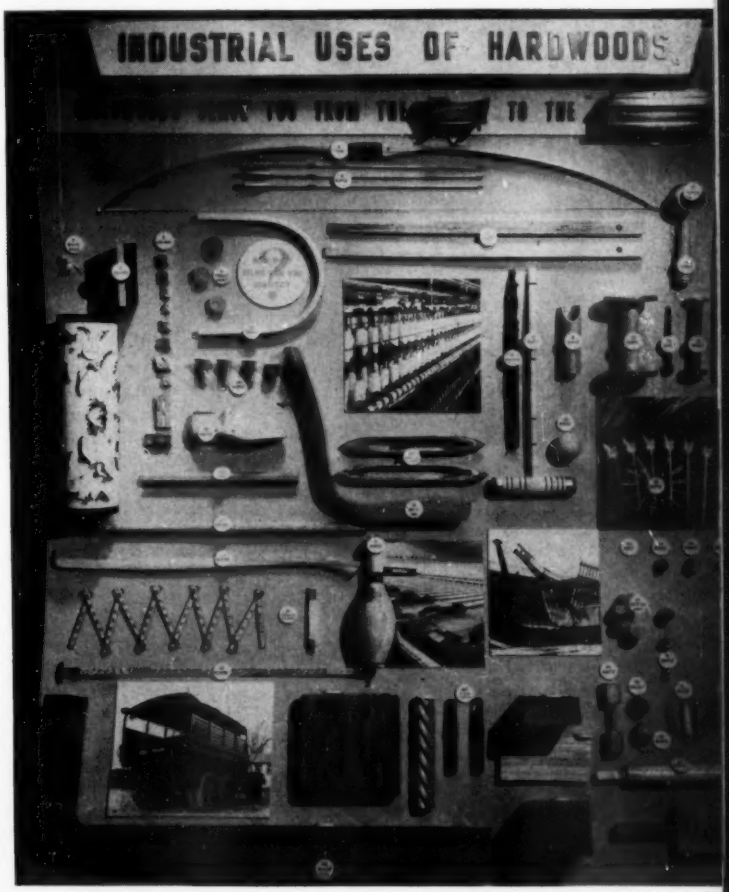
A large globe that lights up to show where any of the 48 different hardwoods are grown dominates the World Sources and Reforestation room of the exhibit



An animated model sawmill, veneer mill and plywood plant set in a colorful and realistic panoramic setting are included in the new hardwoods exhibit at Chicago's Museum of Science and Industry. Scale models of machinery simulate operations shown in accompanying movie

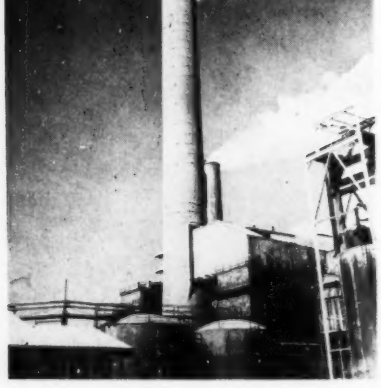


Top, room in exhibit devoted to importance of hardwoods, conservation needs. Bottom, "living tree" tells through a recording how it lives, grows hardwood



Fifty-two hardwood items, ranging from toothpicks to laminated ship beams, are included in the exhibit showing the industrial uses of hardwoods. Each item is labeled as to hardwood variety

Southern Forestry Today



Giant stack symbolizes south's approach to wood growing, harvesting, utilization

Timber growers below the Mason-Dixon line point with pride to progress made during the last two decades

By J. F. ELDREDGE

THE South today is the largest, the richest, most diversified and fastest growing field of forestry practice in the nation. In the vast stretch of territory south of the Mason and Dixon line and east of the plains is found this country's greatest expanse of commercial forest lands, its largest production of forest materials, its greatest area of privately owned timberlands under forestry management, and, by the same token, its largest corps of practicing foresters. The latter part of this comprehensive statement could not have been made by even the most arrogant of the provincially proud two decades ago—although it might have been foreseen.

The forestry situation as it is today in the South is of recent development, and a chart of its growth would not show a smooth and regular curve. The growth and spread of forestry in this region was slow to start and halting and irregular in its progress. The few timberlands under management of foresters by 1910 were confined to two National Forests in Arkansas and two in Florida and to a few private estates.

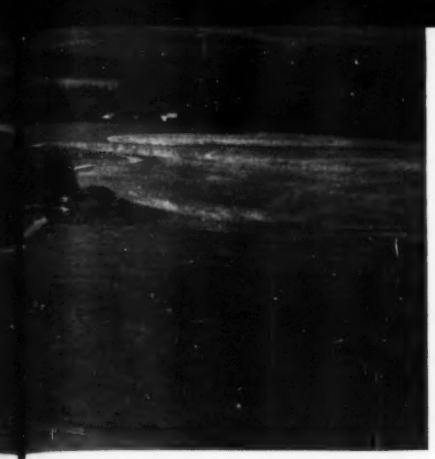
There were no industrial forestry projects and none apparently in prospect. It is understandable now why this was so. The time, so far as private forestry was concerned, was simply not ripe for it. The economic climate necessary for the development of the concept of timber growing as a business on any general scale did not exist.

I believe it can be said that in no country, anywhere, has forestry become an established discipline of land management until the original, old growth forest had been wholly removed or its end was clearly in sight. As long as great reaches of original timberland await exploitation and marketing in any region, there is little incentive for people to enter the field of forestry with the expectation of business success. This was not the situation in the greater part of the South well into the first two decades of the century.

The pressure on our Southern forests for building materials for a rapidly growing nation was tremendous, beginning in the nineties and increasing as the years stretched into the new century. This was particularly true as regards the pines and cypress, but the bottomland hardwoods felt the impact in only lesser degree. The pace of forest exploitation was speeded up to meet the military needs of the first world war.

Toward the middle of the 1920s the end of the original timber supply, heralded by a decline in regional lumber production, was clearly and alarmingly in sight. By 1935, as disclosed by the field inventory of the nation-wide Forest Survey made by the Forest Service, the original uncut timberland had been reduced to less than 20 percent of the total forested area and this remnant was dwindling space.

Southerners of my mellow vintage are inclined to temper this sorrow at the passing of the fine old forests because of a grateful appreciation of the mighty part that their harvesting played in the South's economic recovery from the devastating effect of the war between the states. Beginning late in the dreary seventies



when this prostrated and discouraged region suffered acutely for lack of invested capital and opportunity for gainful labor, lumbermen of the Northeast and Lake states turned southward, acquired vast timber holdings, set up great sawmills, built thousands of miles of new railroads and put hundreds of thousands of job-hungry men to work turning pine and hardwoods into lumber for the national and overseas markets.

Little towns were born everywhere, old towns and cities felt the magic of new money and stagnating seaports rebuilt their rotting wharves. It was the beginning of a long and never stopped climb back towards a place in the sun. We may grieve that it took such a heavy toll of our forest resource but we don't for a moment begrudge the price—we thank the Good Lord that we had what it took.

The published findings of the For-

● **Pulpwood logs fresh from barker move up conveyor at Florida Pulp & Paper Co. plant, North Pensacola**

Instruction in sound forest management methods now begins at the school-age level in the south

● **Members of Florida Bankers Association tour St. Regis Paper Co. pine nursery at Cantonment, Fla.**

est Survey, made as a result of the regional field inventory of the early thirties, brought out much more than the shocking fact regarding the shrinkage of the old timber supply; it was disclosed in convincing figures that the South had a new and lusty crop of young timber coming on in all parts of the region, much of which had reached sawlog size and all of which was increasing rapidly in volume and acreage. The realization of the huge extent of the new forest, its location in relation to transportation and markets, and its current and potential value in the regional economy, brought the thrill of a new and optimistic look-ahead to landowners and industrialists.

At last, after years of deepening gloom over the timber supply outlook, here was a break, a real chance to prolong, if not to perpetuate, the all important role of the forest-using industries in the South. Many of the larger lumbermen and other owners of extensive areas of cutover lands commenced to give thought to the possibility of extending the life of their operations by conservative cutting practices in the remnant of their high forests, while they gradually augmented production from the rapidly oncoming crop of second growth. This, perforce, brought the care and protection of the young stands right into the picture. For the first time the idea of planned, long-time management of the resource commenced to make sense to the business men who headed up the forest industry.

About this time, in the late thirties, a remarkable and important industrial movement made its appearance on the scene. The publication of the Forest Survey findings as to the extent and character of the supply of young pine timber plus the widely publicized experiments of Dr. Herty in the use of southern pine for paper, attracted the immediate attention of northern pulp and paper manufacturers, whose industry had just entered one of its periodic surges of expansion and who were looking for new fields for their plants. Examination of the situation in the southern pineries disclosed just what they wanted.

The building of the great papermills that followed in the next fifteen years marked an industrial development that, perhaps, has had no equal in rapidity of pace and amount of capital invested since the great railroad building years that followed the war between the states. It is notable that the money invested has been all private capital—no government grants or subsidies were involved.

The entry of this new and massive user of pine timber into a region traditionally dominated by lumber manufacturers whose industry was just getting an infusion of optimism from the prospect of a future sawlog supply from the new crop of second growth, had an immediately stimulating effect, so far as forestry is concerned. Thinking men realized that the new market for small pines would make it possible, through thinning, to carry the cost of the transition period while they waited for their young trees to acquire sawtimber size and quality.

The competition for timberlands resulting from the rapid acquisition of the millions of acres of papermill reserves, quickly forced the larger landowners in the older industries to a decision either to sell out to the newcomers and retire, or to augment their holdings and initiate forest management on a more intensive scale. The weak ones fell out, the strong ones, under the management

(*Turn to page* 36)

Southern family looks over naturally planted stand of pine that came back on an abandoned cotton field

Stacks of staves. This is view of storage yard and sawmill owned by M. D. McGee & Son, Yale, Virginia

HISTORY OF FOREST TOOLS

FASTENERS

By CREIGHTON PEET

QUITE as essential as the axes, saws, drills and other tools which men had to develop to turn the forests all around them into useful objects were fasteners — and it was many thousands of years after the first ax before anything as fundamentally simple as the common wire nail was even dreamed of.

Primitive men used vines, strips of skin or sinews to lash flint blades to handles and bind tent poles together. Later, chairs, tables and even roof timbers were similarly bound together with strips of rawhide. As it dried, this shrank and made the joints very tight, so that it was quite a satisfactory fastening — for some things. Our American Indians also used strips of rawhide to "sew" big sheets of birchbark in making canoes and other articles. In fact, until the Europeans came the Indians do not seem to have had nails or screws of any kind.

When fairly good cutting tools were available, timbers were cut to fit together, or "joined" so that the word *joiner* came to be synonymous with carpenter. A fine craftsman could — and of course still can — make such perfectly fitting mortise and tenon joints, that a chair or table will hold up and take heavy wear and tear with almost no additional fastening.

Dowels—wooden pegs driven into holes drilled through matching pieces of wood, have also been used for a long time, and much old furniture and nearly all of our old houses have many dowels in their construction. Even as late as the late 1600's, houses were put together with hardly any nails at all: timbers were joined and secured with dowels.

As for nails, screws, bolts, tie rods, angle irons, brackets, and the whole catalogue of wood fasteners we have today, to say nothing of our modern water-proof glues, they were a long time coming.

Iron plates, angle irons and bolts are often found in old buildings — even some hundreds of years old, and a few wrought-iron nails have been found in furniture made over a thousand years ago, but they appear to be extremely rare.

It is easy to understand how, lacking a plentiful supply of cheap nails, it was easier to build a house of

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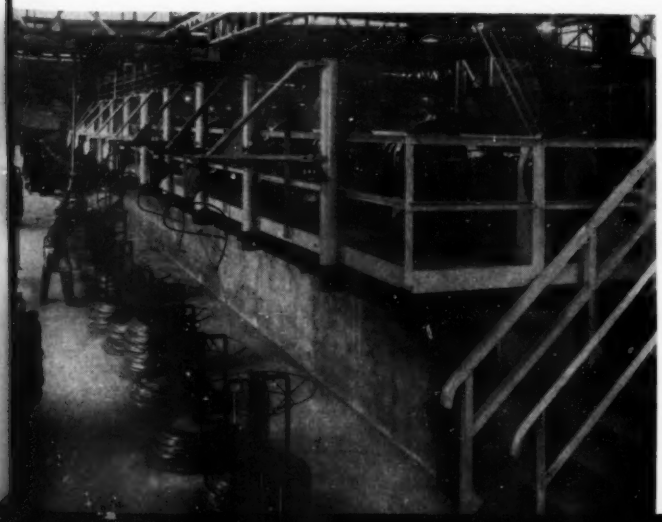


Nails, once fashioned by hand, now are made from heavy wire which comes from a reel, passes through straightening rollers and is formed into nail in fraction of second

This grass-covered hillside was 80 percent sage brush in 1941

Here's the basin before conservation measures healed its wounds

Here is the case history of a very sick stretch of land that was made well again by the proper application of common sense land-use techniques

Grass Roots Conservation

By ARTHUR H. CARHART

WHEN experts talk of "conservation" it often gets rather heavily scientific. To laymen conservation may mean control of stream pollution, planting more fish, poisoning weeds or insects or the protection of the ivory billed woodpecker. Too often the whole business seems far removed from the average sportsman.

But when you see fundamental conservation in action in your own backyard, it comes right home to you in its primary physical sense. You see it in powerful simplicity. That's what happened to us—a dynamic, positive, shouting story of genuine conservation spread before our eyes whenever we stepped to our back porch.

There's no climax of charging a bull elephant, triumphant bagging of a wary bighorn sheep or even the limit of honking geese in this story. But it is full of drama. It is a basic case history, a live demonstration, for sportsmen who want to perpetuate our fishing and hunting. So I'm going to tell it—and doggoneit, I want you to read it!

Then maybe you'll see how principles involved apply to your neighborhood.

Back in 1941 we stumbled into owning a mountain place 100 miles west of Denver. The house sets on a little knoll. Down at the foot of that knoll is Beaver Creek, a pond-trapped little tributary of the Colorado River. We can look for 25 miles down the valley of the Colorado westward to the Rabbit Ear Pass country. And back of the house, the rolling hills of a semi-circular basin stack up to the rim of a higher ridge.

The slopes of the basin are mostly open. It faces south. A few pockets of trees hug in against the north sides of the little ridges within the basin, but the general aspect is open country. The basin as a whole contains, maybe 1000 acres. It's nothing spectacular; just easy-going western mountain country.

All around the little plot we own, is federal land. It is what westerners have called "public domain." For many years ranchers ran their livestock here without any regulation. Then about 1935 lands within the basin were put under the jurisdiction of the Grazing Service and some moves toward management began. But that had arrived after at least a half century of grazing stock there beyond the limit of the grazing capacity of that land.

Ten years ago the state of Colorado bought the ranch property that had the "grazing rights" on this land. The ranch and the public lands associated with its operation were in a critical game wintering area, and by purchasing the ranch with Pittman-Robertson money, the state secured the assurance of the Grazing Service that the adjacent public lands would be assigned to wildlife use; no privately owned stock would be allowed.

At the time this was done, the grazing capacity of the lands was so low only goats were feeding there.

In addition to over-loading by domestic stock, the Colorado State legislature had set up one of those big game refuges, including these lands, that were thought to be so much an answer to wildlife management back in the 1920s. Mule deer and elk within the big refuge, where there was no hunting allowed, had pyramided. An excessive wild livestock use was stacked in on top of the over-loading by domestic cattle.

To put it mildly, that basin was grazed for years like the very devil. That was a very, very sick stretch of land in our basin. But the domestic stock load was entirely removed, and the state, realizing the area was over-loaded with game opened it to hunting and the game herds were cut down toward the carrying capacity of the forage produced.

There wasn't enough grass on an acre of that land when we first became acquainted with it to stuff a pillow. It was sagebrush range. It had been grass in the old days. But maybe 80 percent of the cover a decade ago was sage.

There's a lot of land in the west that has the same history as our backyard. Originally it was grassland—grass up to the saddle stirrups, the old timers will tell you. But here's what has happened on such areas.

Grass is shallow rooted. Sage sends down a deep, woody root. As land is over-grazed, livestock crops grass down close to the crowns. There is no annual replenishment of stems and leaves to keep up the mantle of decaying vegetable matter over the mineral soil. There are no seed heads formed because the cattle eat them off before they mature and there is no natural reseeding. There is trampling around the grass roots. Gradually the few inches in which grass roots grow is bared to direct sun drying, the cloak of vegetable matter disappears, and the shallow, wiry roots of the grass take a beating. But the sage, with deep roots,

(*Turn to page* 30)

His passion for privacy makes the woodcock one of the least known of all game birds. But many hunters swear by him and epicures hold him in high esteem

National Audubon photo by Hugh Halliday

Mr. Anonymous of the Swales

By HARRY BOTSFORD

HE IS probably the least known of all game birds. He has a passion for privacy that makes it impossible for him to be observed continuously. No bird is better engineered. No bird possesses plumage that is more perfectly camouflaged. *Philohela minor* is individualistic. Among all birds, the plumage of the males and females is identical. Among all birds, the female woodcock is the larger.

The woodcock possesses other peculiarities that set him apart. He is, for example, the only bird that sings with his wings, a mocking fragment of silver melody that haunts many hunters, makes him beloved. He lives in an atmosphere of anonymity and he often employs a wisdom that almost approaches the phenomenal, that accounts, in part, for his survival and robust good health.

On the table, he is a strong favorite of epicures and gourmets, and so fond are they of his delicate and finely flavored flesh that they prefer him broiled with the trail, and these entrail are considered to be extremely tasty.

Small of stature, he weighs in at approximately five to seven ounces, is resident in many eastern and southern states and several Canadian provinces. He is migratory and elusive, yet he is a creature of habit. Few hunting dogs can abide him, for he has little if any scent, and he has been known to drive fine and dependable dogs stark mad because of this protective trait.

Hunters swear by and at him. But they hold him in high affection, call him by such names as timberdoodle, mud snipe, whistler, marsh plover and bog sucker. There are hunters who speciously claim to have made doubles on woodcock, but I've never

(*Turn to page* 39)

MANAGING YOUR WOODLAND

. . . *In Illinois*

By H. F. SIEMERT

"YOU know, having a piece of timber on a farm now-a-days can be a mighty nice thing. And just opposite to what a lot of you fellows might think, there's money growing on those trees out there in the woods. Believe me, I found that out for myself just this last winter."

Those were the words of Glenn Hickam, a wide-awake Randolph County, Illinois tenant farmer, as he was passing the time of day with some neighbor friends of his awhile back.

"And," Glenn continued, "that forestry fellow, 'Scotty' Wainscott, sure knew what he was talking about when he explained that trees got ripe and had to be harvested just like any other crop on the farm. We did just that, you know, and got over $1300 worth of timber out of our 43-acre patch of woods and never hurt it one bit. Matter of fact, it looks better than ever to me now that all those mature, defective, and 'bad-risk' trees have been taken out. And, fellows, this you'll never believe, but I was actually making over $2.50 an hour by working in the timber myself last winter! According to Scotty, I can keep on working in the woods like that every winter during those slack, cold days and there's no reason in the world why I can't keep on getting that kind of money. Yes sir, there's money in trees all right; trouble is, most of you fellows just haven't been able to see it yet."

This true happening started the day that Jim Keyes, farm planner for the Randolph County Soil Conservation District, informed owner John Herschbach while on his farm that he had a pretty decent stand of timber and he really should have the local district forester at Sparta go over it with him. Well, Mr. Herschbach did exactly that and on July 20, 1951 all interested parties were tramping through the timber making an intensive study of the trees and land while talking things over. Scotty's study, or "cruise" as it is called in timber talk, soon disclosed some interesting facts.

First of all, out of the 3210 board feet per acre of trees then occurring there, only 540 board feet were considered ripe and ready for immediate harvesting, while another 640 board feet per acre were "just around the corner," classified as fair or "storage" trees. Most of the trees, 2030 board feet per acre to be exact, were young, fast-growing stock and these were scheduled for proper development and future harvestings. This volume analysis, coupled with the fact that the timber was understocked with only 31 "good" trees per acre (50-60 is desired), made proper cutting mandatory if this tree-factory was to be maintained, let alone improved.

Thus it was that Scotty and Glenn got together and marked and measured almost 30,000 board feet of ripe trees for proper commercial harvesting. The marketing of this product involved a little shopping around and waiting since white oaks suitable for stave bolts were being offered along with the regular saw timber. But Scotty's knowledge and a little patience all paid off for it wasn't too long afterwards that Mr. Herschbach received a check for

(*Turn to page* 26)

Glenn Hickam, an Illinois tenant farmer, looks over the 18 white oak fence posts which he cut from a single cull tree

THE FORESTS OF Cyprus

By HENRY S. KERNAN

This strategic country is last discarding destructive practices that for centuries have ravaged her forests. New laws skillfully applied and an ample budget are mainly responsible for the change

LOOK SOUTH from the Turkish coast on a clear day. On the faint and grey horizon is a jagged outline of peaks that rise abruptly out from the dark, white-capped sea. Or look west from Syria. You see the same hazy range but 60 miles away.

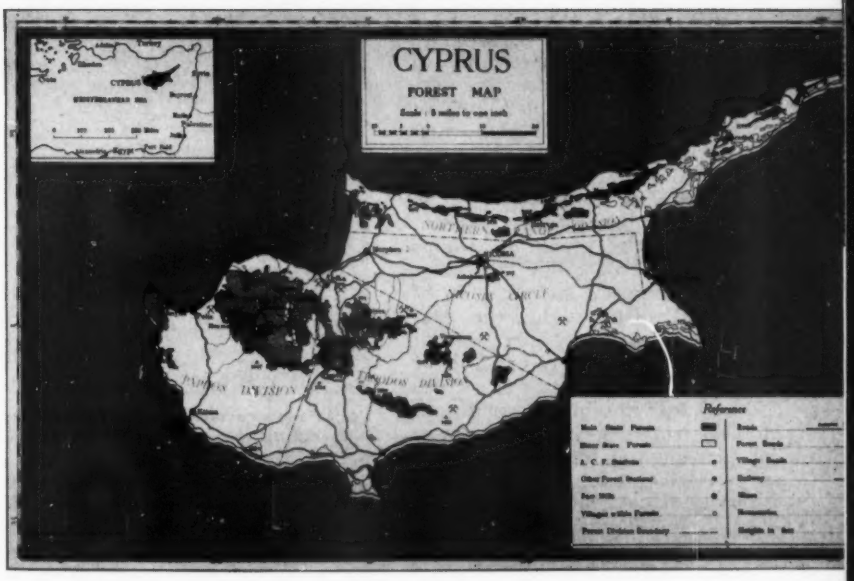
You are at the extreme northeastern corner of the Mediterranean, and those are the lovely, forest-clad mountains of Cyprus. Around them the restless waves boom against a coastline of long white beaches and rocky headlands, long enough to enclose a hinterland of 3572 square miles. Legend says that this foaming surf once washed ashore on a sea-shell Aphrodite, the Love-Goddess of the Ancient Hellenes.

Presumably somewhat later in history, though still some 6000 years ago, neolithic man arrived and wove his round wattle huts on the edge of a broad alluvial plain ringed on the north by a narrow ridge of porous limestone and on the west by an igneous massif rising to the 6403-foot crest of Mt. Olympus.

For centuries colonists cleared the fertile, grain-bearing soil and sought timbers higher and higher in the mountain forests for the copper and gold mines; and for the navies of Egypt, Lydia and Persia. Thus even before the Golden Age of Greece, Cyprus had emerged as a prosperous industrial and trading link between the East and West. Cypriot sailors and Cypriot sea-craft became famous in the commercial and naval maneuvering which shaped the history of the ancient world.

Much of this activity was military. Cyprus is the third largest island of the Mediterranean and is well-endowed with forests, mines, and farmlands. She has often been a prize worth taking, and has changed hands many times during the course of her long and turbulent history. The latest phase dates from 1878 when the English took over after 307 years of Turkish rule. This arrangement was confirmed by the Treaty of Lausanne in 1923 and Cyprus became a Crown Colony.

One could hardly expect her natural resources to emerge unscathed. Recognizing this, the Turks employed a French forester in 1873. His report is a shocking description of once-famous woodlands destroyed by centuries of grazing and turpentining; of fires, cutting, up-rooting and land-clearing; of floods, windstorms and erosion. The devils of this Gehenna were the herds of free-ranging goats and their lawless, half-wild, poverty-stricken masters. The futile results of his report were a stiffer severance tax and a new law to forbid the export of wood.



A decade later another Frenchman arrived who became equally shocked and equally at loss. With some bitterness he wrote that the only quality in common between the mixed population of Greeks and Turks was their instinctive hatred of trees.

Now, 75 years later, these same forests are a delight to look upon. In a country where wood, water and pasture are at a premium, they yield greater benefits and take an increasingly large part in the general prosperity and well-being of the island. They are thus proving the soundness of forestry as a science of land use even around the Mediterranean Sea where the long summer drought and the uncertain winter rainfall create less than optimum conditions for tree growth. Good law skillfully applied and an ample budget for the agency entrusted with that resource have overcome difficulties that once seemed overwhelming.

The forests of Cyprus cover 660 square miles. Ninety-seven percent of them are state-owned. The Forest

The young of this Mediterranean island take quickly to the teachings of Americans and others offering technical help

Department manages 532 square miles as Major State Forest, most of which is in the highlands, and controls cutting on the small area of private forest. Local civil authorities are responsible for the 98 square miles of odd lowland scrub which are Minor State Forest.

The predominate climax type in Cyprus is coniferous with or without an understory of dwarf trees and shrubs. Exceptions are the belts of alder and plane along the narrow canyon floors of the western range. At present only one-fifth of the land classed as forest is mature and in a fully productive condition. Most of the rest is either land awaiting planting or in some primary stage of succession.

The principal timber species is an Aleppo pine, *Pinus halepensis* var. *brutia*. The range of this remarkable tree begins at sea level, where it can germinate and survive on thin, rocky soils with a rainfall of 14 inches, and continues up to 5200 feet. It is wind-firm, drought-resistant, and has strong, resinous timber of good quality. During Turkish times nearly every sizable specimen was gouged and chipped for turpentine — a practice which has since stopped. Management is now removing the scarred victims in a series of light selective cuttings and is making plans to tap the trees more scientifically.

Use of modern methods to protect trees is becoming rule rather than exception

In striking contrast to the Aleppo pine is the Troodos pine, *Pinus nigra* var. *caramanica*. This weird tree is at home only on the upper (over 3900 feet) slopes of the western range, where it often appears to draw water and nutrition from the depths of bare rock. Here the frost, the stiff winds, and the deep-piling, long-lasting snow gnarl the limbs and shape the crown into a huge table, round and flat, perched atop a stout trunk. In spite of precipitation close to 40 inches a year, other factors make the growth very slow. The Forest Department as yet makes final cuttings only of mature and defective trees, many of them over 300 years old; and it patiently guards the gradual shaping-up of bushy seedlings to post-size over a period of 40 years.

Another tree, the *Cupressus sempervirens*, is trim and handsome and forms dense stands along the northern range, and elsewhere is a common ornamental and windbreak. The cypress wood is of superlative quality.

Presumably the Cedars of Lebanon, *Cedrus brevifolia*, were once more common. At least studies of the Roman copper mines at Skouriatissa have turned up quantities of cedar pitprops. Now they grow only in one deep, winding canyon in the heart of the Paphos Range. To American eyes they appear to have the drooping, wind-blown top of the hemlock, the erect cones of the fir, and the delicate foliage of the tamarack. The Forest Department counts and guards every one of the 30,000 specimens left; and by dint of threat, fine, pleading and force has stopped the custom of taking the branches for souvenirs.

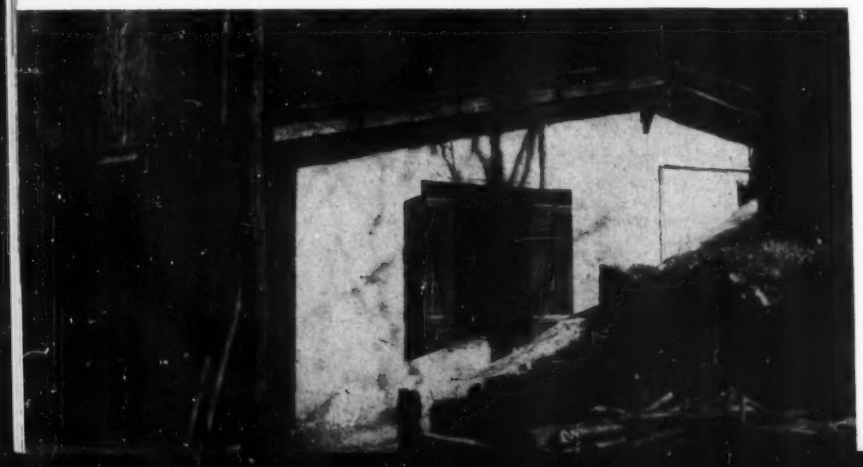
Another species surprises the American not by exoticism but by familiarity. Near the remote ruins of the Ayios Neophytos Monastery grows a natural stand of liquid amber trees. At least one botanist claims they belong to the same species as that whose star-shaped leaves are so familiar in southeastern United States. But in Cyprus they have apparently not increased their range for centuries.

For hardwood timber the island must depend upon plane and alder, but they have many uses. One oak, the *Quercus infectoria* (*lusitanica*), grows to majestic size on the rolling, vine-covered foothills of the west. But it supplies little timber. Shepherds value too highly the far-spreading shade and the crop of acorns for the grunting black hogs.

These timber species yield annually a million cubic feet, which is about one-third of the island's requirements. Presumably as growing stocks are built up, they will

(*Turn to page* 43)

Because wood, water and pasture are at a premium in Cyprus, the forests play a very large role in the prosperity and well-being of the islanders



AFA'S FOREST CLINIC

Dwarf Mistletoe

By LAKE S. GILL

Senior pathologist in charge of Albuquerque, New Mexico field laboratory, Division of Forest Pathology, Bureau of Plant Industry, Soils, and Agricultural Engineering, U. S. Department of Agriculture

DWARF mistletoes are parasitic seed plants that cause an estimated annual loss of 50 million board feet of timber in the coniferous forests of the northeastern and far western United States. From an economic standpoint, the greatest damage occurs in stands of ponderosa pine in the southwest, lodgepole pine and western larch in the northwest, and black spruce in the Lake states. Dwarf mistletoes are closely related to the Christmas or leafy mistletoes, which grow mainly on broadleaved trees. Some owners of broadleaved stands regard Christmas-mistletoe infection as an asset. They can harvest and sell the sprays at the holiday season; the money they make on the mistletoe more than pays for any damage it has done to its host tree.

But to owners of coniferous stands, dwarf- or leafless-mistletoe infection means nothing but loss. The parasites cause reduced tree growth, poor seed production, low-quality wood products, increased susceptibility to attack by insects and other diseases, and premature death of many trees.

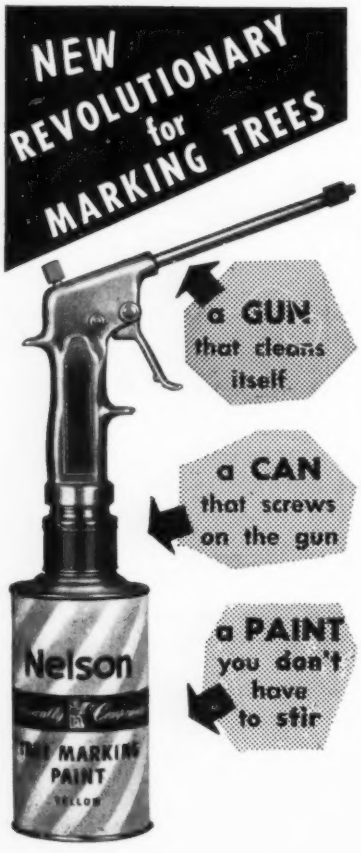
In long-standing mistletoe infections, witches' brooms and trunk cankers develop; directly or aided by secondary organisms, they make part of the trunk useless or less valuable for lumber. Large knots are commonly associated with witches' brooms. In old trunk infections, the wood itself is brash, weak, and often discolored or pitch soaked.

Dwarf mistletoes are leafless, flowering plants that produce shoots on the stem and branches of their host trees. The shoots range in color from green to yellow to brown and from one-fourth inch to 12 inches in length. Flowers bearing pollen and flowers that produce berries are borne on separate shoots. Pollination is accomplished by insects. Seeds are borne in explosive berrylike fruits and at maturity may be shot as much as 75 feet away from the host tree. The seeds are sticky and adhere to any surface where they alight. New infections can develop only when the seeds germinate on young twigs of a suitable host plant. When the primary root penetrates the bark, a new mistletoe plant forms. The root system, really absorption system, invades and maintains itself in both the wood and bark of its host. From its host it obtains food and water. The absorption system can live for many years within the tissues of the host plant without producing aerial shoots.

The most practical method for controlling dwarf mistletoe is to cut it out, thus eliminating the sources for further spread. Where infection is heavy or where the main stem is invaded, it is usually necessary to cut or poison the tree. Where only a few branches bear mistletoe shoots, it may be desirable to prune them. The entire mistletoe plant usually can be removed by pruning, provided the shoots are at least 18 inches from the main stem. In the case of well established infections less than 18 inches from the trunk, the absorption system probably has invaded the trunk and new shoots would be likely to develop at the pruning cut. Young infections, where the shoots appear only on three- to four-year-old wood, can safely be eliminated by pruning if they occur less than 18 inches from the trunk.

After all visible mistletoe is removed new plants may appear on the remaining trees in alarming proportions within a few years. Most of these plants will have been present at the time control work was done but were either too young to have produced their first shoots or had temporarily ceased producing shoots. A second cutting-out operation is usually necessary three to seven years after the first one, to remove these plants before they are able to produce large seed crops. Stands so treated should remain relatively free from the parasite for 20 years or more. In managed stands, control of dwarf mistletoe involves elimination of infected trees at the harvest cut, followed shortly by control operations in the remaining growing stock.

Dwarf mistletoe on main stem will deform or kill this sapling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Managing Your Woodland

(*From page* 21)

$1020, $750 of which was for the saw-material and the other $270 for the bolt-timber. This success story could very easily have its ending there but, actually, the best and most interesting part was yet to come.

That was when Glenn, needing some fence posts and lumber on his farm and having some spare time, learned the real value of a timberland for perhaps the first time. Mr. Herschbach instructed Glenn to get the material from any ripe trees left in the woods and again Scotty and Glenn went into the timber and found and marked nine more white oak trees having a volume of 2000 board feet. However, Scotty soon convinced Glenn that it would be much better business to cut the white oaks into stave bolts, use the other parts of the tree for lumber and posts, and buy whatever else might be needed out of the cash received.

That's how Glenn worked in the woods and found that money can grow on trees. The following factual resume tells the rest of the story most vividly:

1) **Cut** (from ripe trees in his timber); 159 cord feet of stave bolts (sold); 500 board feet lumber tally of logs from tops and cull material (used); 18 fence posts from tops and cull material (used).

2) **Expenses incurred:** Felling and bucking (owner and two boys, two and one-half days of eight hours each); hired labor—40 hours—$16; (hand cross-cut saws used; Hickam's time—20 hours); splitting bolts and posts (by Hickam in 12 hours); skidding all products (by Hickam in eight hours); loading and hauling (by Hickam in eight hours); cost of hiring a truck—$20; cost of sawmilling (500 board feet at $20/1000—$10; total cash outlay—$46.

3) **Values received** (net): 159 cord feet [a measure of cut wood equal to one-eighth of a cord, or 16 cubic feet] of stave bolts ($1.35/cord foot)—$214.65; 500 board feet lumber (cost $35/1000 if purchased)—$17.50; 18 fence posts (cost $.35 each if purchased)—$6.30; gross total value—$238.45; less amount he could have received if these nine trees sold standing to a commercial operator—2000 board feet at $35/1000—$70; less cash outlay—$46; net return to Hickam for his efforts—$122.45.

Glenn put in 48 hours of work for the $122.45 value which means $122.45 divided by 48 or $2.56 per hour earned by working in the woods. If Glenn had sold his timber as stumpage, he would have been paying the buyer the equivalent of $2.56 per hour for cutting and removing it for him.

Actually Glenn also earned the stumpage value of these trees so the actual rewards for his 48 hours turned out to be $122.45 plus $70 or $192.45 divided by 48 equals $4.01 per hour worked. No wonder he is convinced that money grows on trees and, needless to say, he'll continue to take good advantage of it each winter.

In addition to the planned harvests, cattle and fire are being kept out of the Herschbach timber so as to help bring the present, rather low growth volume of 97 board feet per acre per year up to the minimum 200 board feet of annual growth of which it is easily capable.

As a means of achieving this type of goal on the 4,000,000 acres of native woodland now occurring in Illinois, the state Division of Forestry has during the past eight years been able to set up 12 forest districts covering 81 of Illinois' 102 counties. In charge of each district is a competent, trained, professional forester like Scotty Wainscott; ready, willing, and able to assist any farmer at any time. Aside from doing the locally customary timber-management work, these foresters also provide information relative to reforesting and making money from idle acres. They give talks and forestry demonstrations before all types of groups and organizations, and they are very active in trying to establish an effective forest-fire control organization throughout their district. Such work is all part of a United States Forest Service cooperative venture with the individual states which has thus far created over 1000 districts throughout the country. Such services are all provided free of charge.

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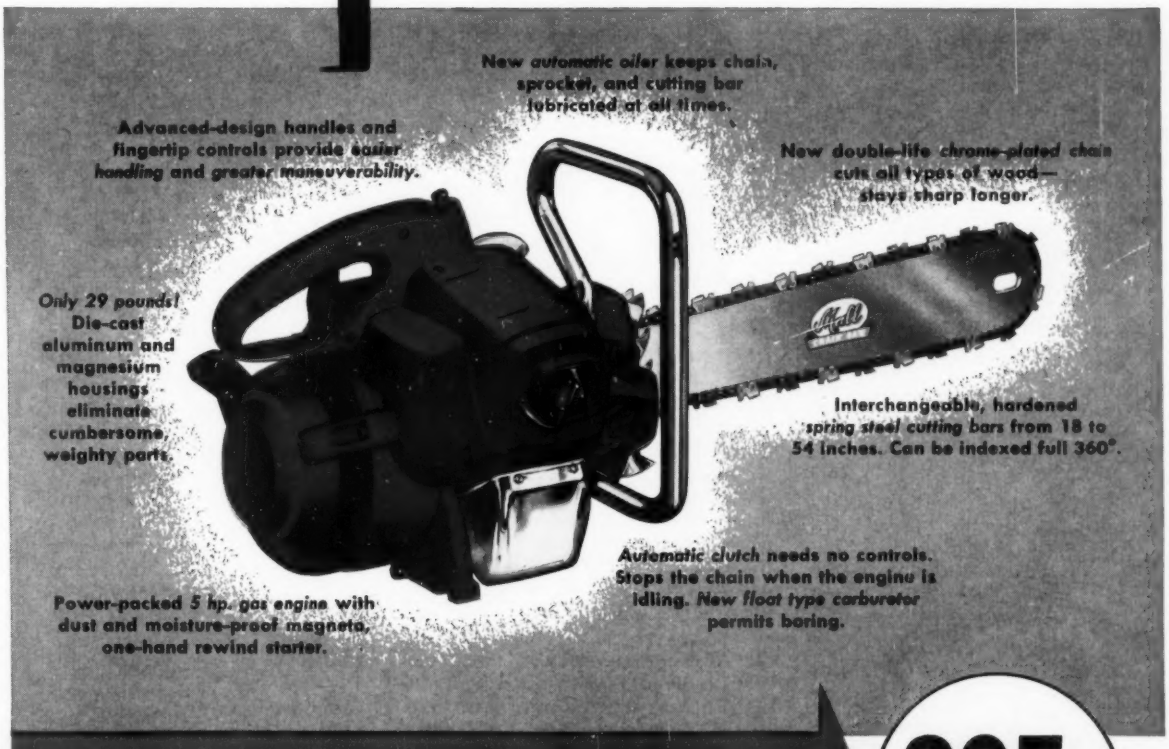
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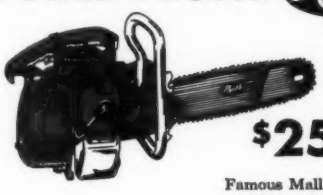

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FIRE EQUIPMENT DIVISION
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Washington Lookout

(*From page* 4)

Congressman Ellsworth's Bill to prevent such miscellaneous acquisitions from interfering with private sustained-yield forestry programs, was reported favorably by the House Committee on Interior and Insular Affairs, after the Secretary of Agriculture withdrew his unfavorable report on the bill (reported here last month). The Secretary agreed to work with the committee and the Oregon representative in attempting to overcome some of the objections raised by the U. S. Forest Service.

State and private forestry cooperation activities of the U. S. Forest Service remain at the same level as in fiscal year 1953, except for the elimination of funds for flood prevention work on state and private lands. Responsibility for this activity has been transferred to Soil Conservation Service, although the Forest Service and the cooperating states will continue to promote cutting practices that will aid in flood prevention.

Watershed protection is a new item in the Department of Agriculture appropriations. This item was inserted by the House, denied by the Senate, and finally agreed upon by the conferees. The Senate's objection was based on the fact that the projects involved are a few (50) of a much larger number on which preliminary examinations have been made, but which have not been authorized under the Flood Control Act of 1944, and upon the further fact that the Department had not asked for the funds. Total federal cost of the program on the 50 watersheds is around $30 million, with local and state sources and individuals in the 27 states involved also contributing. The projects range in size from 12 acres to 980 acres. Estimated federal costs per project range from $32,000 to $3,500,000. The work includes application of soil and water conservation and flood and sediment reduction measures, such as small dams, channel improvements, streambank stabilization and gully control.

Interior Department appropriations for forestry and related items all received some reduction below both the 1953 level and the budget request, except for a slight increase over last year for management of lands and resources under the Bureau of Land Management. Park Service management and protection remains at the 1953 level.

Hardest hit of the conservation programs was that of the Tennessee Valley Authority. First, the entire fund for resources development was eliminated, on the basis that these activities should be taken over by the states and other federal agencies in the area. The program was finally salvaged for another year. To provide for the resources development function the Congress permitted TVA to divert $500,000 from other activities, to use $675,000 of operational income, and allowed $175,000 in "new money."

Long-term credit for owners of well-managed forest lands has been provided by passage of another Ellsworth Bill, H. R. 5603. This and the companion bill, S. 2069 by Senator Guy Cordon of Oregon, experienced very little difficulty in either house. Much credit for its passage must be given to the practically unanimous support given it by forest conservation organizations, including The American Forestry Association, and leaders of the forest industries. Final action was precipitated by the work of the Western Forestry and Conservation Association, which working with western banking associations, obtained the endorsement of the financial institutions. As passed, the bill is permissive. It allows national banks to lend up to 40 percent of the appraised value of forest lands. Maximum length of the loan is ten years under mortgage arrangements that will amortize the principal at the rate of ten percent a year.

Another interstate forest fire control compact is in the making. In a bill, H. R. 6393, introduced by Representative Colmer of Mississippi, Congressional approval is sought for a compact among the states of Arkansas, Louisiana, Mississippi, Oklahoma and Texas. Purpose is to provide for interchange of fire prevention planning and fire control forces and equipment in the manner already authorized in the existing New England compact. While the initial compact calls for the participation of the states named above, other contiguous states may join, subject to approval by member states.

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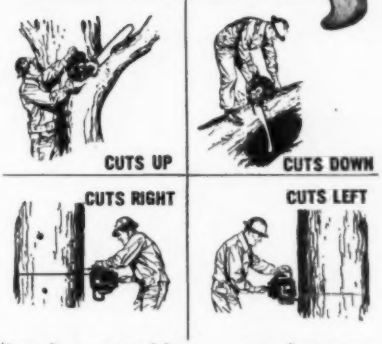

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Grass Roots Conservation

(*From page* 19)

doesn't suffer that way, and it takes over.

Right now there is a lot of whoopte-do in the west about going into these stretches of sagebrush, "eradicating" the brush, and reseeding to grass. It costs plenty to grub out the tough brush or kill it with chemicals; then there are more costs for reseeding.

Just how those so whooped-up about this operation expect the grass they plant to take over after the sage is knocked out, and maintain a grass range under expected heavy future grazing is one of those unanswered questions I'd like to see answered. Why won't the same cycle of grass kill-out and sage return be re-enacted? And how many times at what cost will the sagebrush be eradicated and the areas re-seeded?

That may seem aside from the story of our backyard. But it's part of the big picture. There's prospect of considerable public money being spent trying to repair damage done by privately owned stock on public lands. If someone wants the low-cost answer to re-establishing ground cover that is permanent, it's in our basin.

Our basin's hillsides were bleeding. Soil mat to catch rain drops, break their impact, and nail them down to soak into earth below, was gone over wide areas. Little gullies, some the size of your thumb, others several feet deep and a yard across, were eating into the basic mineral soil. Other slopes were sloughing all over the exposed surface—sheet erosion.

Even in the first year after domestic stock was removed, some touches of grass began to show up between the sage. It was sort of a skinny forecast of what might be ahead, but you could see grass between sage if you looked for it. Another important change was the ripening of seeds on the little grass that remained. They weren't eaten off by livestock before seed matured.

(*Turn to page* 32)

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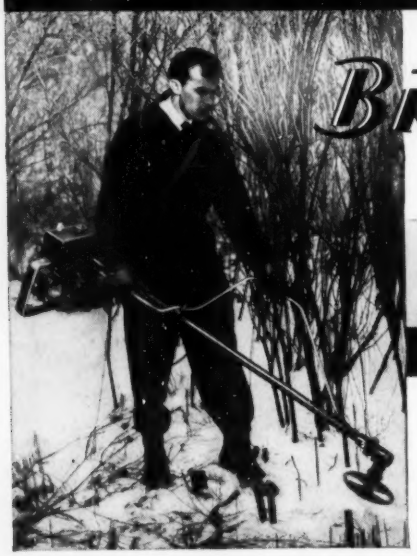

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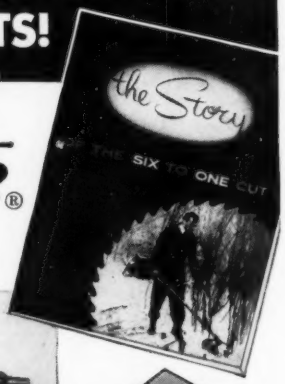

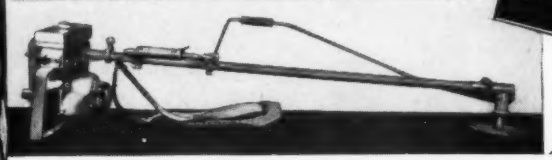

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Grass Roots Conservation

(*From page* 30)

There wasn't any spectacular "project" about this; no bull-dozers ripping out the sage, no low-flying airplanes fogging poison down to kill the big-leafed plants of all sorts. The grass was just given a chance to do its stuff and it went at it.

With increased grass roots threading through upper inches of soil they began to catch the moisture and use it, and that cut off the seep of water down to the deep roots of the sage. The brush began to die. Grass began to take over.

One mid-summer day in 1946, we sat in our living room and looked out the big windows at a buster of a storm coming up the river valley. When it hit, it was a deluge; a gully-washer. The rain was so heavy we couldn't see the gate a couple hundred feet from the house.

After the shower had climbed the big ridge rimming our basin and the thunder had galloped into the forests of the far slopes, I went out to see what had happened in the gulch just north of our house. The gulch is one of the minor drainages of the basin, embracing maybe 200 acres.

At the lower end of the gulch, where it splays out into the bottoms of Beaver Creek, there was a fan of new mud, from zero to maybe six inches deep, 150 feet long. I traced up the gulch to see where that silt had originated.

The whole batch of mud had been sliced off the bare, exposed earth of a road cut and road shoulders 75 yards above the point where it had been deposited.

I went on up the gulch. In the few years the grass had bounced back a lot, and what I saw was little short of amazing. There still were those little gullies the size of your thumb cutting through exposed basic soil. But as they had gathered fierce little rivulets, scoured away soil, the tiny torrent smacked into lusty little patches of grass. The muddy little soil-robbers got no farther. They spread out, the mud settled, the water soaked into the ground. That was what happened during a prodigious downpour, after giving the range a rest and the ground cover a chance to re-establish its hold on the earth.

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The sage has continued to kill out; grass, given a chance will whip the brush. In the ten-year span we have watched the change, the slopes have shifted from about 80 percent sage to 80 percent grass. Stockmen looking at that grassy stretch at summer's end, get all fired up over so much good feed "going to waste."

But the deer herd, after reduction, has climbed back to good numbers. The elk that formerly wintered up the slopes of Beaver Creek, have found the forage waiting in our basin, and a hundred head or more winter there. Previously the State had been supplying hay for winter feeding, both for elk and deer. These animals cannot prosper on such feeding; there was heavy winter loss growing out of this hand-out program. The state stopped that; the game animals now have natural feed available. The winter die-off resulting from artificial feeding has ended. Hundreds of dollars of state funds in addition to game animals have been saved because just a little of the natural range was allocated to game use. Because there was no over-burden of domestic stock to crop off the forage before the deer and elk needed it during the winter, good feed was there when they came down to get it.

For several years after we got this place, an old sage grouse hen nested near an early-season spring up the little side gulch. There never were more than a half dozen chicks produced. Then the flock began to increase, and last year there were over thirty sage grouse produced in that gulch.

The story of this spring is the real climax of this tale; the most significant thing that happened in our basin.

The little gulch near the house forks about 200 yards above our place; in the form of a "Y." Where the arms join there is a patch of willows, and the ground form is sort of terraced, as it is when old beaver dams have been filled with silt and become meadowy.

Early in our residency there was a little water in old cow tracts around the willows; by mid-June the tracks were dry and baked. I asked Oliver Dolloff, my neighbor, if there ever had been a spring there, and maybe old beaver ponds.

"There used to be a live flow of water down that gulch about thirty or more years ago," he said. "Hasn't been any water in a long, long time.

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I don't know about it if there ever were."

All the evidence is there were ponds there and enough water to fill them.

I watched the moisture that gathered into that spot grow. By 1947 a little flow of water spilled down below the willows for fifty feet and sunk into the sand. There was water still standing in depressions around the willows at the end of the summer. In 1949 a bit of water was trickling for a quarter of a mile down the gulch almost to where it emerged from the low ridges on either side at the bottoms along Beaver Creek. There was enough water, so we threw in a pipe-line and put in a sink and bathroom at the house, drawing water from the spring.

The summer of 1950 was exceptionally dry. If we had water there in the fall, we would have it at all times. A little ditching and deepening located one flow that would fill a three-quarters of an inch pipe nearly to capacity. That comes near to being a live spring.

Clear waters that can be in our streams and the constant flow that maintains the best fishing conditions, depend absolutely, on conditions in the basin that collects the snows and rains. If it is beaten and bared, cannot trap the raindrop to let it percolate to emerge in some clear spring, the precipitation skids off. It robs the exposed soil of upper surfaces, carries that burden into streams to foul the water, kill out water plants and insects, mud up spawning beds and produce floods.

The water-holding qualities of a watershed may be forest, brush, grassy sod or contoured tillage in a cultivated field. Whatever the detailed method may be, the insurance of clear water for streams, the maintenance of good fishing positively start with slopes where precipitation falls.

It has been ten years now since we saw our backyard a sagebrush range, over-used, abused, bleeding from exposed sore places where ground cover had been destroyed. No federal or other funds were poured into grubbing out the brush or re-seeding. The whole thing happened because natural forces were given a chance to go to work on reconstruction.

There's a whole lot to what we call "conservation." It may include in its ramifications, restocking of streams or game areas. Possibly it includes poisoning weeds and insects, grubbing out brush and seeding cleared areas.

But at the very foundation of maintaining our fishing and hunting lies the question of what happens in the first few inches of soil and what grows out of it. If we over-use or abuse these elementary factors in maintaining cover and food for game, watershed qualities that will maintain good stream flow, we might as well quit trying to do very much further along the line. For these are the foundation of all.

So the story of our backyard and the demonstration of where basic conservation begins is a rather simple yarn. In its total significance it is a tremendous case history.

Maybe you can call it "grass-roots conservation," for that is really what it is.

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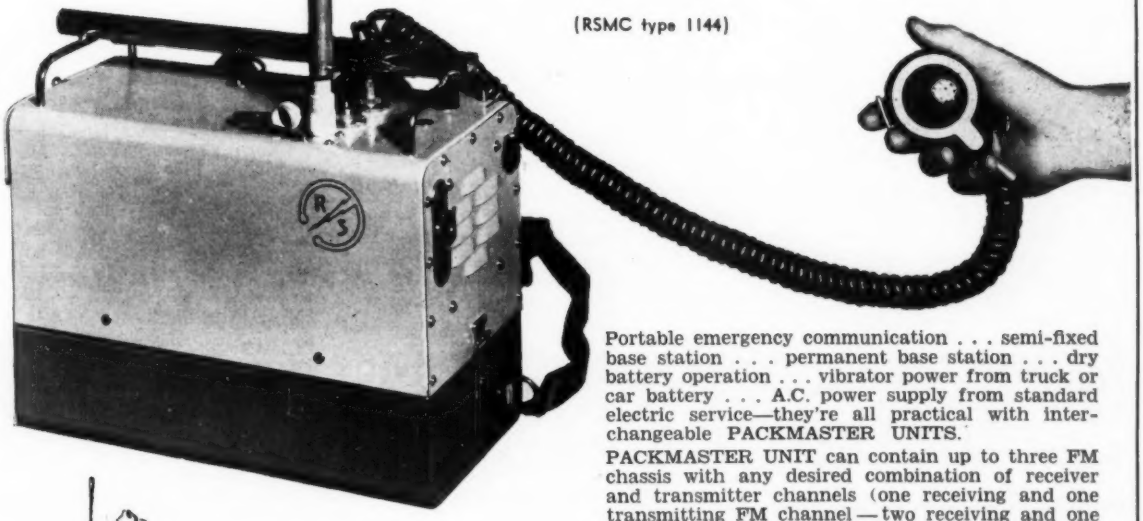

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Southern Forestry Today

(*From page* 16)

of the second generation of lumbermen, bought more land, hired foresters and got ready to operate on a sustained yield.

All of the millions of acres of papermill land throughout the South are under the management of experienced and skillful foresters. Nearly all of the larger sawmill holdings are now, or soon will be, under forestry management of equal intensity. All of these large users of wood realize that only a part of their future needs can be supplied from their own acres, and, to a greater or lesser degree, have set about to encourage and aid the smaller owners of timberland around them to protect and conservatively harvest their timber stands, to the end that one crop of timber may follow another, throughout the land, without fail or loss of volume.

Public foresters, state and federal, have for many years kept up well planned educational campaigns designed in the main to reach the small forest owners. These combined efforts, directed along both silvicultural and protective lines, are now beginning to pay off.

One of the main reasons why farmers and other small owners are now beginning to respond, is that the competition for sawlogs, poles, ties and pulpwood has steadily driven stumpage prices for all kinds, sizes and qualities of wood upward. Sawtimber that twenty years ago sold for four dollars per thousand in a reluctant market is now eagerly sought at $25. Pulpwood in 1936 brought from 50 to 75 cents per cord on the stump; now the price ranges from four to six dollars. The realization of such values from the farm woodland has driven home the point for the first time that the timber crop is worth taking care of.

So now we see why forestry has become a big and widely spread business in the South—the economic climate has become warm and favorable. The profit incentive to grow timber is there and Americans, North or South, have never failed yet to respond to a business prospect as soundly based as this.

Today in the South the management of timberlands for profit, on a crop-wise basis, is well on its way to common acceptance. The larger ownerships, that is those of paper and lumber mills, and in State and National Forests are, with few exceptions being handled, generally under the direction of trained foresters, with the objective of building up growing stock and increasing annual growth, with sustained yield on an ascending curve as the beau ideal. Not all the large holdings are receiving much forestry management, but the trend in this direction is well marked. Losses from fire, once thought to be an almost insurmountable bar to widespread private forestry in the region have on those larger forests been reduced to a bearable figure and the situation is steadily and rapidly improving.

But it should be pointed out right here that the industrial forests of large size, plus the National and State forests, do not together include more than a third of the total woodland area of the region. The remainder, the bulk of the whole, is owned in many thousand small parcels, ranging in size from a shady patch back of the pasture to a few thousand acres scattered through a county.

The owners are from all walks of life—a typical American pattern of rural ownership. Farmers own the greater part in conjunction

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with their tilled acres and their pastures. Small town merchants, bankers and professional men are frequent owners, as are widows, the heirs of undivided estates, small sawmill and naval stores operators. Except among the farmers most of these people are non-resident and the tenure of ownership is often transient, unstable or purely speculative.

In most of this 60 percent or more of the South's forest land, good forest management is something for the future to bring forth. There are many reasons, some of them good, why these modest landlords are looked at askance by foresters impatient to write "mission accomplished 100 percent" at the bottom of the schedule. Previously I wrote of favorable economic climates, of Americans in pursuit of a dollar and stated that there was the beginning of response on the part of small owners. Well, I am not retracting those optimistic words, but I will go so far as to say that the word "beginning" should have been underlined.

It is the main problem of those eager to see the fullest development of the region's economy to reach these people, or at least a large segment of them, with the gospel of good forest practice. Some of these little owners are just plain ignorant, more are apathetic or indifferent, many lack the necessary capital and some are not convinced that their particular situation will profit by any change in land management. A great many of them are thoroughly competent to steer the proper course for their chosen objectives. All are Americans endowed by their creator with the right to do as they damn please with their property.

The one thing that will make the deepest dent in this formidable bulwark against forestry progress is the profit motive. Now that it is becoming really profitable to care for, protect and wisely harvest even small timber stands, the way has been opened. To those of us who understand the complexity of the situation, there is encouragement in the progress that has been made in recent years in this field. There is room for conviction that eventually at least a third of this part of our forest land will be built up to something approaching full production.

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advance that has been made in the reduction of losses from fire. If anyone had told me, even twenty years ago, that we would arrive where we now are as regards the incidence and spread of wild fire; if he had predicted such a change for the better as we have seen in recent years, I would have marked him down as an amiable bu' ignorant optimist. We ancient ones, with all our sensing of the many natural advantages around us, used to despair that any owner short of a well financed government could ever practice forestry in the face of the dreadful annual fire risk.

We are still, and probably always will be, the hot-spot of the nation so far as fires go, but now-days the attack is pushed forward so aggresively from one end of the region to the other with such well organized, closely coordinated forces of trained, experienced fire fighters, equipped with modern efficient fire fighting machinery that the curse has been reduced to an acceptable risk.

In the last two decades or so, landowners have gone all out in the establishment of planted pine forests, and a tour of the South will take you through hundreds of miles of thrifty pine plantations, some of them now old enough for first partial harvest cuts. To date something a little less than two million acres of pine have been planted and the work goes forward with only the capacity of forest nurseries to limit the number of acres planted each year.

At present the annual output by the 36 nurseries in the 11 Southern states approaches 240 million seedlings. Demand has exceeded supply each year and nearly all of the nurseries are taking steps to increase output.

As I see it, forestry in the South has an alluring future; its development is just getting well under way. The fact that climate, soil and geographic location as regards markets are all favorable contributes greatly, of course, to this view—but the circumstance that gives even greater assurance is that the growing of successive crops of timber has been accepted as a part of the region's every day husbandry.

The culture and the harvesting of forests is now big business in the South, and an important and fixed part in its economy. The only limit to its future expansion is the capacity of its soil to produce wood under intensive management and the ability of a sane and peaceful world to absorb its products.

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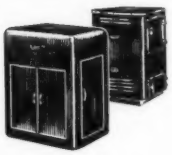

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Mr. Anonymous

(*From page* 20)

seen it done in 30 years of hunting.

Indians have a curiously gentle legend about his origin. An old, wrinkled Cornplanter Indian, an inmate of a New York reservation, told me the story, and his black eyes twinkled as he spun it.

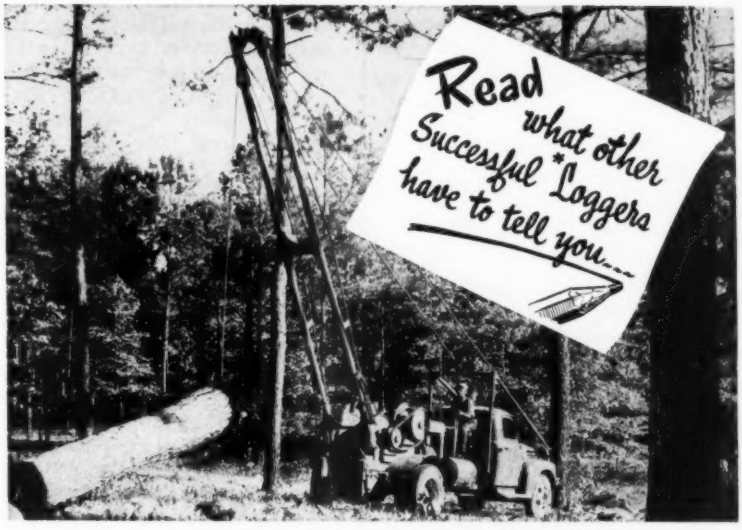
It seems, he explained, that God was pretty tired when he finished with the making of all birds, but he was a tidy God and he was annoyed when he looked around and saw that he had a lot of left-over parts. There were some absurdly short legs, a motley collection of mottled brown, blue, tan, gray and white feathers, a long, out-of-proportion bill and other oddments.

Wearily, but with infinite care, God assembled the oddments and presently he had a squat, perky, breasty bird with beady eyes. He gave the bird wisdom, the capacity to fly fast and erratically.

Completed, God admired the bird. The bird was already constructed when he remembered that he had not given the little chap the gift of singing. Naturally, this wouldn't do. It called for a miracle. He lightly touched the six attenuate primaries, tossed the two birds into the air. They circled, testing their power of flight, then headed for cover. Just as they found suitable cover, they suddenly changed direction of flight and the air was filled with a golden trifle of melody. . . . God smiled.

It's a good story. For all I know, it may be true. This I do know: unfailingly, when a woodcock changes direction of flight in a sudden, twisting turn that same haunting, taunting strain of music is heard. Usually, it happens when you are about to press the trigger of your gun and then it seems to be defiant and mocking, a sound familiar to the woodcock hunters, as you score a clean miss.

He has wisdom that does not seem to be vested in other birds. He is never seen sitting in a tree or bush. He doesn't run across the highway or do anything calculated to advertise his presence. When he is molting, he modestly retires to the depths of cornfields, away from possible raids by predatory cats and foxes. He emerges only when he can fly, for flight is his only defense against attack. Woodcock nest on the ground, their feathers providing coloration that blends smoothly with ground



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He is engineered to fit neatly into the pattern of the environment in which he lives. The upper mandible of his bill is fitted with a flexible hinge which can open while the long bill is driven into soft soil in search of worms—the tip of the bill is so sensitive that he can automatically tell by touch what is edible and what isn't.

The eyes are set unusually high in his head, thus giving him extra vision when flying or feeding. He is largely nocturnal in his habits and the eyes are so equipped that he can take advantage of even a little light. He is built close to the ground, his contour and plumage, plus prehensile toes, enabling him to walk quietly and safely on soft, moist ground. He can even swim when the occasion demands.

Mostly he dines at night. Once the small belly is comfortably filled, he retires to a nearby hillside sparsely populated with poplars and settles comfortably for a long nap in dry grass, briers and leaves. Experienced hunters seek him in this cover, which is also ideal for the hunter, as it provides open shooting. The bird's flight is not too long; he can often be reflushed for a second, possibly a third shot. Because of the erratic flight, because the bird often spins into the air suddenly, unexpectedly and virtually at the very feet of the hunter, the misses are frequent. His getaway is remarkably fast.

The woodcock season usually opens in mid-October, as the birds are migratory. There are local residents, and then these are swelled by flight birds, the birds that fly down from Canada. On a moonlit night, when there's a drift of wispy clouds, if you happen to be standing on the cover traditionally used by flight birds, you may witness something that will be long remembered. The sky will be darkened with the momentary, flitting shadows of the flight birds against the golden moon. As they answer some unseen signal, they change direction, swirl down to cover. The air is filled with fragile and dulcet whistles that dwindle to nothing. A moment's silence, then the final straggler swings in with his own clear and unmistakable whistle. The next day, there will be good hunting in this cover.

If the weather is moderate, if the menu is satisfactory, the birds rest up from their long flight, feed voraciously. Then one night they take

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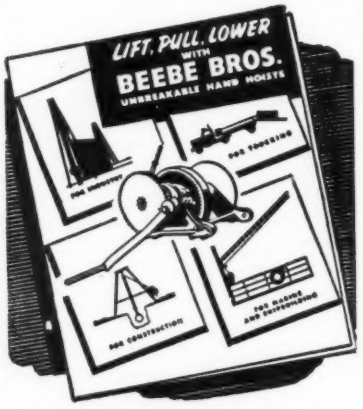

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There are many members and friends of the Association who find it impractical to contribute to its educational activities during their lifetime. Gifts in the form of a bequest are welcomed. Officers of the Association will gladly consult at any time with those who wish to know more about designating gifts for educational work in forest conservation.

Following is a paragraph suitable for incorporation in wills:

"I hereby give, devise and bequeath _____ to The American Forestry Association, Washington, D. C., a nonprofit District of Columbia corporation, or its successor, or successors, for the purpose of promoting the corporate activities of said Association."

off, and there are no flight birds to be found in the sector. There are those students of the bird who maintain that the flight birds take off on a regular schedule, leaving the grounds ready for the next flight, a prearrangement affair agreed upon with other flocks. Could be, but it is doubted by the realist.

It isn't often the observer can see a woodcock walking. He is pompous, his carriage is erect and he really struts, reminding one of a soberly dressed, prosperous and plump Quaker. He is plump because he feeds well. His diet is largely earthworms, mature insects and a small proportion is composed of seeds and vegetable matter. The truth is, his feeding grounds are seldom inhabited by other birds. The woodcock is not unsocial, although he gets along with other birds. In fact, he's a peaceful and serene creature, but he prefers complete privacy, away from his common enemies, man, the common house cat, foxes and weasels. He never advertises his presence, remains anonymous.

Only in the mating season does his inherent dignity desert him. He repairs to what is known as the singing or nesting grounds, and when it is early dusk, he struts his stuff. In a little circle, he struts, lifts an unlovely voice in song of love and yearning. The voice is a curious soprano grunt, harsh and guttural. Ever and anon, he takes to the air, does some unrestrained acrobatics, looping and diving, swooping and swerving. He is showing any interested female that he is literally a whale of a fellow. He continues this alternate pacing and brief flight until success attends his amorous labors. At the end of this brief interval of seasonal masculine silliness, he returns to normal, again becomes his normal dignified self.

The annual kill of woodcock is nearly 300,000 birds. But, in spite of the size of the kill, there are clear indications that the population remains almost static, a clear tribute to his inherent wisdom and his native caution. There was a time when the annual kill was tremendous. The open season either didn't exist or they were over-long. There were no laws against marketing, and hunters slaughtered the birds outrageously, sold them at top prices to satisfy the voracious and exacting appetites of epicures. The conservationists, however, sensibly and sharply shortened the open season, made it a crime to sell the birds. From that

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time on, the timberdoodle has flourished.

Mid-October, when the woodcock season opens, is one of the best times of the year for the hunter. The ground is covered with a patina of white frost, the morning air has a pleasant nip to it, a winy fragrance combined of burning leaves, wild plums nestling like purple jewels in the creamy frost, apples under the gnarled trees of orchards on deserted farms, the faint fragrance of spicy apple butter simmering over an outdoor fire of hickory in some farm yard. Some trees still flaunt their wanton colors of scarlet and somber browns. The sun has a restraining but stimulating warmth. It is a comfortable day to be afield and zest is added to it by the crack of your gun, the mocking music of the timberdoodle's wings as he swings to safety. But, at the end of the day, you may have in your game coat a few fat birds, and you are weary and happy over the results.

C-Z Extends Holdings

Crown Zellerbach Corp., San Francisco, maker of paper products, has acquired control of Canada Western Lumber Co., Fraser Mills, B. C., and Elk Falls Co., Campbell, B. C., newsprint producer, as its subsidiaries. C-Z plans to integrate operations and facilities of its subsidiary, Pacific Mills, with the Canadian organizations. C-Z is considering plans to construct a $25,000.00 pulp mill at the site of Elk Falls Co.'s newsprint mill at Duncan Bay, B. C.

You climb into your car, buoyed up with the thought of dinner, a hot bath, a change of clothes, a cold drink, a few minutes of leisure before the call to the table. If you are an old timberdoodle man, you know what will be on the table. There will be a fat, perfectly broiled woodcock on squares of whole wheat toast, delicately browned, perfectly flavored, each bite of the dark meat will be epicurean. There will be tiny potatoes, boiled and tossed in butter and minced chives, string beans, still a little crispness in them, engagingly tasty, a green salad. Hot corn muffins . . . and if there's a bottle of Burgundy, the feast will be perfection.

God knew what he was doing when he made the timberdoodle, you reflect over your coffee. Truly, no better bird ever existed than Mr. Anonymous of the Swales.

The Forests of Cyprus

(*From page* 24)

eventually supply all her needs.

Now forestry in Cyprus is principally concerned with scrubwoods and understories, where grow a wealth of native species. Most noticeable is the golden oak, *Quercus alnifolia,* which the botanist Drummond first noted in 1754 as "a kind of alder the leaves of which shine like a green orange; the backs of them when young are yellow, but as they grow old, they turn brown." This "alder" spreads widely over the western range. The wood is hard and durable, and is in great demand for plows, handles, fuel and charcoal.

The Hermes oak, *Quercus coccifera,* looks like a tiny holly with stiff, spine-armed leaves, and supplies quantities of acorns for fodder. The arbutus has showy pink bark and red berries, and makes fine chairs; the oleander is for canes and alaternus for shepherds' crooks. From rockrose comes labdanum and from storax a poison to stupify eels. A half a hundred species supply fuel, tools, food and medicine to the country people. They become deeply versed in this lore and firmly believe that in the wonderful array of bright and scented shrubs growing on their mountains are the answers to many of life's most trying problems.

Cypriot foresters fight no running battle with the understory of scrub hardwoods such as our own foresters do in the southern pinelands. Their battle is against the enemy of this cover — the foot-loose, free-browsing goat; and after several decades of vacillation they have settled on a policy of his total exclusion from the forest. This policy has become a matter of personal and official faith with every one of their Department's 382 employees and is rapidly becoming that of Cypriots in general.

Since the start of the Forest Department in 1879, the grazing problem has drawn considerable attention. Various management practices

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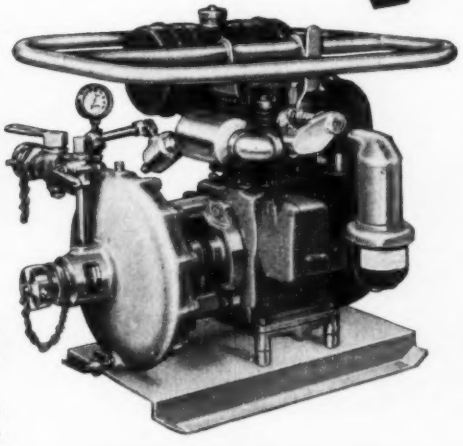

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and laws were tried and discarded because they brought little improvement and much explosive retaliation from the people most concerned. Illicit cutting had been brought under control, but free-grazing and the inevitable concomitant of incendiary fires were as rampant as ever when, in the late 1920's, an exhaustive enquiry into the problem was made. In 1936 as a result two very significant policies were set up.

One, free-range goats, an unmixed evil to the trees of Cyprus must be rigidly controlled.

Two, efforts to expel the shepherd and his flock by police methods are bound to end in costly failure and must be replaced by cooperation.

From that year the Forest Department has worked fast and has brought about spectacular results.

First it registered and licensed by name, village, and number of head those shepherds who had rights to graze their flocks in the forest. Next it offered to buy out these rights as the owners retired or found other trades. The law allowed no transfer of rights and no accrual of new ones. The Forest Department bought and suppressed them once and for all.

Now 97 percent of the Major State Forest and 78 percent of all forest land has been cleared of goat-grazing; and the avowed object to free them entirely is within sight. Fires are now rare; and the way is almost clear for intense forest management.

Up in the mountains where the olives are dug and the forest is no longer grazed or burned, millions of seedlings are proving that control of goats is the cheapest means of reforestation.

It also is the surest way to increase the available supply of water. Sixty-two villages now pipe their water directly from the forest. This water alone is worth all the scrub goats on the island.

The Forest Department has long realized the importance of a corps of technical foresters but that the numbers who could receive training abroad were limited. The need was for a source of recruits trained in

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Cyprus in the traditions of their service and in the special problems of the area.

For this purpose in 1951 the Department opened a Forestry College which offers a two-year intensive course on the ranger level. In conformity with European practice, the school operates as a branch of the government primarily to prepare its own employees. But of the 36 places available in the college 15 are reserved for foreign students who can carry the knowledge of forestry gained in Cyprus to other parts of the Middle East.

The Cyprus Forestry College is the fulfillment of a long-cherished plan and an achievement which will make Cyprus an important center for forestry education and research in the Middle East.

Forest Tools

(*From page* 17)

stone, bricks, mud blocks, or logs than wood. Lacking not only sufficient nails but sufficient sawed boards, the American Colonists found log cabins the first and simplest answer to their housing problem. (It is estimated that today the average small house is put together with some 400 pounds of nails.)

The predecessor of our modern common wire nail, or cut flooring nail, was a home made article, hammered out by hand in the long winter evenings while the family sat around the open fire. Two hundred years ago such hand-made nails were so valuable that a man's stock of nails was often mentioned in his will.

Sometimes a family leaving a house to move to another part of the country, would burn it down to recover the nails, and this occurred so frequently in one town that the village elders offered to give a family as many nails as their house probably held, if they would not burn it down.

Colonial farmers used to add to their income during the winter months by making nails, using a small forge set in the chimney corner. The head and point were formed with a hammer on a small anvil. Storekeepers used to supply bundles of "blanks" or nail rods — and in exchange for his finished nails the farmer received so much credit from the shopkeeper. It is reported that an expert nail maker could make several hundred nails a day.

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2500 ROOSEVELT ROAD
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STOP FIRES FAST WITH

INDIAN FIRE PUMPS

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D. B. SMITH & CO. UTICA, N. Y.

The home manufacture of nails by the Colonists was one of the events which led up to the American Revolution. England had expected to sell all such manufactured items to the Colonies, and this tendency on the part of the Colonials to start their own manufacturing was bad business. There was even a brief attempt to forbid the making of nails in New England, but it was abandoned.

Even in the South Seas nails were highly prized, for in 1767 when the British frigate "Dolphin" anchored off Tahiti, the crew found they could trade nails for roasting pigs — the bigger the spike, the bigger the pig. After a few days the captain became alarmed and set sail. The men were pulling so many spikes from the ship that he was afraid the "Dolphin" would fall apart.

The first machine for making nails was invented by Jeremiah Wilkinson, of Cumberland, R. I. in 1777, but the first real production of nails was from Jacob Perkins' machine, perfected in Newburyport, Mass. around 1790. As perfected, this could turn out the astounding number of 200,000 nails a day. However, as usual, a lot of people thought the old hand-made nails were superior, and for many years there was a theory they held better because they were rougher.

The first big nail factory was in Phoenixville, Chester County, Pa. Originally powered by a water wheel, this nail works later used steam, and was one of the first plants in the country to use coal as an industrial fuel.

The wire nail — which is today's "common" nail, was invented in France in the 1830's, and introduced to the U. S. in 1851. By 1880 it was the commonly accepted nail, although the rectangular "cut nail" is still the preferred nail for fastening hardwood flooring, and other uses.

Screws seem to have been a recent development — it was not until around 1400 that they appeared — the threads being filed by hand — a process calculated to keep them scarce. By 1568 a Frenchman named Besson had invented a die to cut threads — but this was still a long way from modern high speed machines which turn out thousands of finished screws an hour.

Bolts—which were very important wood fasteners when bridges, roofs, etc. were held up by wooden trusses, were first made in the U. S. by "power" by a blacksmith named Micah Rund—and his power was a bull walking in a treadmill.

Today the fastening industry produces a vast number of items from railroad spikes to shoe nails — most nails now being made from heavy wire which comes from a reel, passes through straightening rollers and is formed into a finished nail in a fraction of a second. In all the fastening industry produces some 400,000 different items, from nails which fasten wood to concrete, to screws which are driven with a hammer.

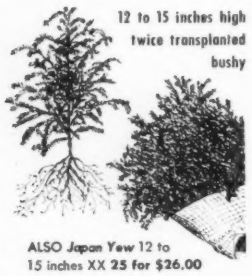
As for the "penny" designation of nail sizes, nobody seems quite sure how it came about. One story is that when nails were made by hand a 6 d., or six penny nail for example, indicated a size worth six pence per hundred nails.

Another theory is that six penny nails sold for sixpence a pound.

In any event nails, screws, bolts, glues and all other fastenings are priceless today. Without them we'd all fall apart.

These **25 HEMLOCKS**

(entirely NURSERY GROWN) *for* **$18.00**



12 to 15 inches high twice transplanted bushy

ALSO Japan Yew 12 to 15 inches XX 25 for $26.00

Quick-growth, handsome, evergreen, grows in sun or shade. Hemlock makes the most beautiful of hedges. (Space 18 inches apart.) XX grade is ideal for safe shipping. Pay express on arrival ($1.60 to $2.00). These are lusty 6-year-olds.

Catalog of many other trees and shrubs of extra value free on request (except 25c West of Iowa).

	(10)	(25)	(100)	(1000)
12 to 15 inch XX.....	———	$18.00	$ 70.00	$650.00
15 to 18 inch XX.....	$12.50	26.00	98.00	950.00
18 to 24 inch XX.....	15.00	33.00	120.00	———

ALSO LARGER EVERGREENS, thrice transplanted, extra bushy, the largest heaviest grade safe to ship with roots in damp moss, avoiding heavy expensive balls.

	(10)	(25)	(100)
Your selection of kinds:.....	$21.00	$45.00	$165.00

Choose from: *Northern Hemlock* 2 feet high, also 5 kinds of Yew, 1 to 1½ feet high (*cuspidata, Hicks, Vermeulen's, Brown's,* or *Kelsey Yew*).

KELSEY NURSERY SERVICE Write to Dept. D-51 Highlands, N.J.

Happy Hunting Ground

What is perhaps the only coon hound graveyard in the U. S. was discovered recently by Game Biologist W. J. Harris in Alabama's Colbert County Game Refuge. Originated and maintained by the Tennessee Valley Coon Hunters Association, the unique cemetery is a monument to the devotion of sportsmen to their favorite dogs.

Letters

(From page 3)

Wound Dressing

EDITOR:

In your July 1953 AMERICAN FORESTS, p. 26, the article "Your Shade Trees" (Tree Paint) is stated that asphaltum does not make a satisfactory wound dressing.

But I believe it is ideal for the purpose, although I do not claim to have any research work on the subject.

Years ago, a house painter patient of mine told me that a good asphaltum varnish would not stick permanently on wood —but if the asphaltum varnish were diluted with two to three times as much turpentine and applied, then when thoroughly dry it were used with only equal parts of turpentine and allowed to dry thoroughly, it would thereafter hold the straight asphaltum varnish perfectly. The turpentine carrying it into the wood surfaces.

I have thus applied it to two-inch wounds made by pruning. Then some years later cut through the wound and found it had healed over perfectly as far as I could see without histological examination.

One wound three and a half by five inches on black walnut in my backyard was healed over in four or five years, as were plenty of others.

It seems the asphaltum stimulates the healing process much as does Balsam of Peru in our ointments.

Also, I would expect the asphaltum to be mildly antiseptic at least.

If I remember correctly, the Bureau of Standards was quoted at one time as stating that asphaltum varnishes were 98 percent effective in keeping out moisture.

May I also state that I can show you black walnut twigs that grew eight and a half feet in one year. Two such trees from nuts planted in 1930 are now ten and a half inches in diameter, three feet above ground and pretty nearly 60 feet high.

F. W. Bremer, M.D.
Pittsburgh, Pennsylvania

EDITOR:

Copies of your letter of July 24 together with one from Dr. F. W. Bremer, Pittsburgh, regarding my article on "Tree Paint" in the July issue of AMERICAN FORESTS were received.

I have consulted with Dr. Rush P. Marshall, director, Bartlett Tree Research Laboratories, regarding this matter since he has done the major research work on the subject.

Dr. Marshall's remarks are as follows:

There is no broad disagreement between you and Dr. Bremer.

1) We account for good callus under gilsonite varnish from a standpoint of retardation of water loss at the cut margin.

2) We believe that the function of the dressing is not entirely to keep out the water, as is the case in housepainting, because we know that there is much moisture in the living tree.

3) Dr. Bremer's thinning of the asphaltum obviates our objection to the material being applied in very heavy coatings which stimulate decay.

4) We would urge, however, that he follow the very wise precaution advised by the United States Department of Agriculture for the inclusion of 0.2 percent phenylmercury nitrate in order to guard against infection.

R. R. Fenska
White Plains, New York

Cork Potential

EDITOR:

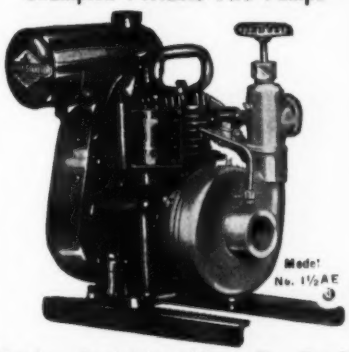
I thought this month's (May) article "The U. S. Can Grow Cork," was very interesting. The author, William Estey, says that some areas in eastern California and central New Mexico are potential cork producing areas.

Would you please send me any information available concerning the: requirements of the soil and atmosphere necessary for these trees, their shade tree potentials, and where young trees may be obtained.

I am very much interested in getting cork underway in our own country. If cork can be grown here, why not?

Leslie Moore
Compton, California

Champion Portable Fire Pumps



Darley Portables Must Be Good! State of Minn. Forestry Dept. Has 45 Champions in Service!

Darley Champion Portable Fire Pumps were selected over other makes by the State of Minnesota for hard service in the State Forestry Department.

Darley Engineering Brings You More Water and Higher Pressures with Champion Lightweight Portables

Capacity up to 250 gallons per minute. Pressures up to 125 lbs.

Write for 108 page catalog of Fire Equipment. Also 44 page booklet of Fire Pumps and Fire Trucks.

W. S. DARLEY & CO., CHICAGO 12
Manufacturers of Champion Fire Pumps and Champion Fire Apparatus

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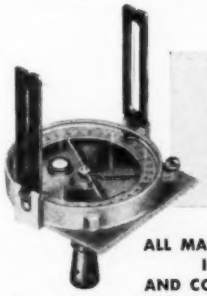
LEUPOLD *Engineered* COMPASSES

Ask any veteran forester whose job depends on making fast, accurate surveys. He will tell you that LEUPOLD Compasses set a professional standard for accuracy, simplicity and convenience. In no other compasses are dimensions, weight and size of dial so ideally proportioned.

LEUPOLD CRUISER COMPASS

Timber cruisers and foresters select this precision made compass for its compact size and exclusive LEUPOLD features. Needle measures 2¼", yet outside maximum diameter of case is only 3⅝". Easy-to-read dial is graduated to single degrees and marked for both quadrant and azimuth readings. Coin operated external magnetic declination adjustment. Township plat. **$12.75**



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Surveyor's staff compass of highest quality. Furnished with ball and socket joint for mounting on Jacob's staff or tripod. Graduated straight edge for plane table work. Permanently mounted circular spirit level. 3¼" needle. Exclusive LEUPOLD external magnetic declination adjustment. Comes in saddle leather carrying case with belt loop.
MODEL A **$40.00**
MODEL B with vertical angle scale and sight, and 5-min. vernier **$50.00**
Choice of degree, per cent, topographic scale.

ALL MAKES OF SURVEYING INSTRUMENTS AND COMPASSES REPAIRED

Foremost in manufacture of precision engineering instruments since 1907

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AT YOUR INSTRUMENT DEALER OR USE THIS MAIL ORDER COUPON

Enclosed is ☐ check, ☐ M.O. for $_____
send LEUPOLD Compass checked (no c.o.d.)
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_____ **FORESTER,** Model B @ **$50.00**
☐ Degree, ☐ Per cent, or ☐ Topographic scale.
Send literature on ☐ Compasses, ☐ Levels.
Name_____
Address_____
City_____ Zone____ State_____

Feature Photo of the Month

Photos used on this page will be of unusual rather than esthetic qualities and subject matter will be restricted to scenes, events, objects or persons related to the use, enjoyment or unique aspects of our renewable natural resources. For each picture selected AMERICAN FORESTS *will pay $10.*

AFPI photo by John Calkins

Camera portrait of a woodsman. Shouldering his ax, long-time lumberjack Clarence Zeimer pauses to watch a familiar but always fascinating sight — a big tree beginning to topple earthward. Scene is in the Wisconsin woods

$8,400.00 PRIZE VALUE
(including dealer prizes)

IN DISSTON'S

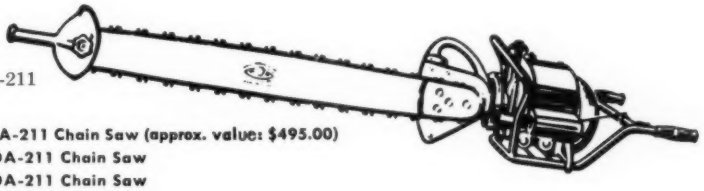
See it Saw
Name a Saw
Win a Saw

DOUBLE CONTEST

Win one (or two)
Disston Chain Saws plus one (or two) Big Cash Prizes!

Think of it! All you need do is suggest a name for either the Disston DA-211 Chain Saw, or the Disston DO-101 Chain Saw, or both . . . just get your dealer to demonstrate for you . . . then tell in ten words or less why you chose that name—and you stand to win in Disston's great new DOUBLE contest! And look at this DOUBLE list of prizes:

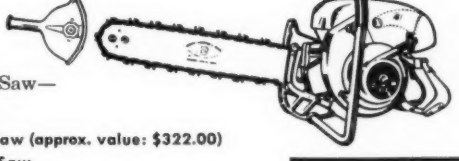
Contest #1



For naming the Disston DA-211 Chain Saw—9 hp, 2-man

1st prize $500.00 cash and a DA-211 Chain Saw (approx. value: $495.00)
2nd prize $300.00 cash and a DA-211 Chain Saw
3rd prize $200.00 cash and a DA-211 Chain Saw
4th prize $100.00 cash and a DA-211 Chain Saw
5th & 6th prizes—each a DA-211 Chain Saw

Contest #2



For naming the Disston DO-101 Chain Saw—1- or 2-man, versatile, lightweight

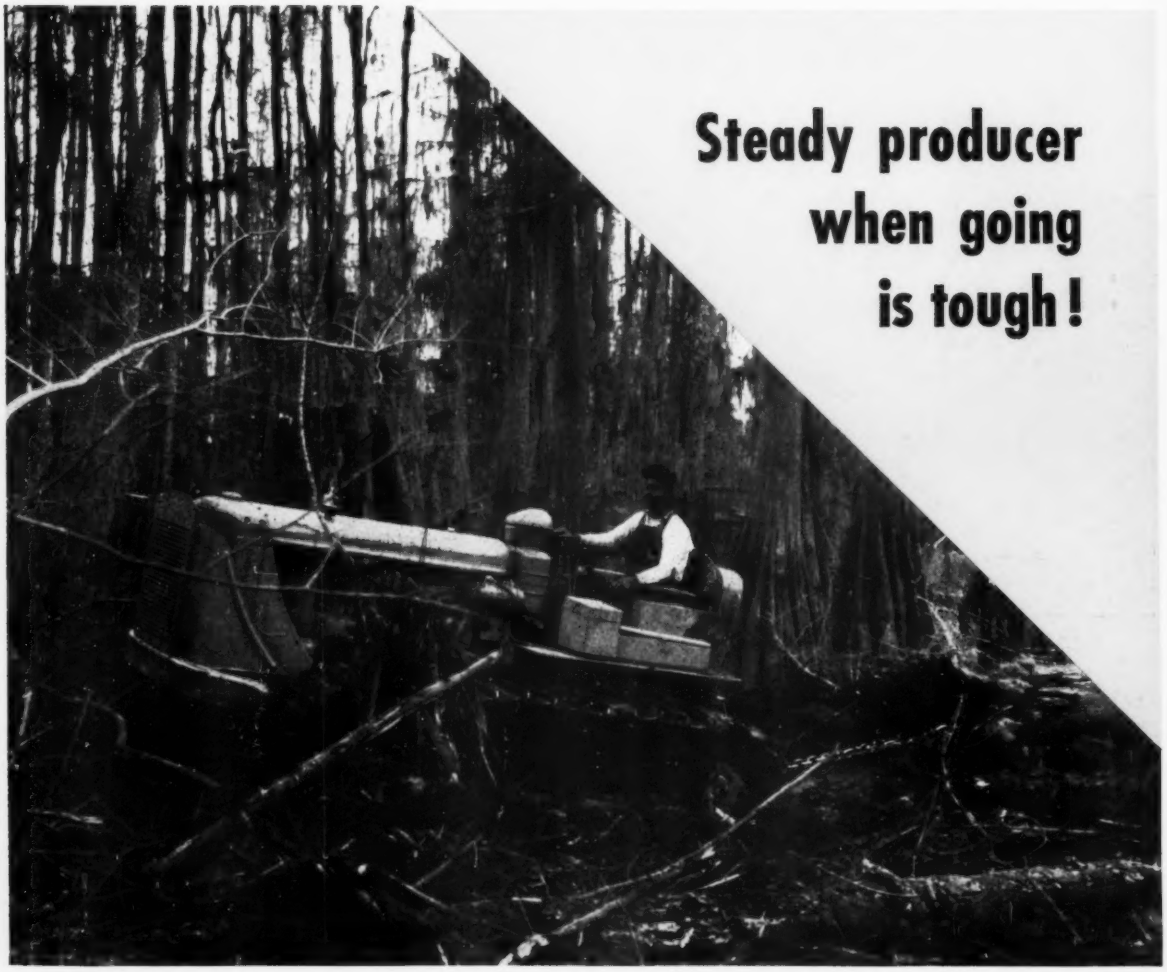
1st prize $500.00 cash and a DO-101 Chain Saw (approx. value: $322.00)
2nd prize $300.00 cash and a DO-101 Chain Saw
3rd prize $200.00 cash and a DO-101 Chain Saw
4th prize $100.00 cash and a DO-101 Chain Saw
5th & 6th prizes—each a DO-101 Chain Saw

BUT REMEMBER—get your dealer or distributor to help you to enter either or both contests, *you must have official entry blanks.* You can get them FREE, along with contest rules and instructions, from your nearby Disston Chain Saw dealer or distributor. If you don't know his name, write us. Go to your dealer and get your contest entry off this week sure! Contest entries must be postmarked October 31, 1953, or earlier.

DEALERS

Special prizes for you, too! Ask your distributor or write us for details.

HENRY DISSTON & SONS, INC.
79 I Tacony, Philadelphia 35, Pa., U. S. A.



Steady producer when going is tough!

THERE'S a lot of small growth and the going is muddy in this cypress stand twenty miles northwest of Vicksburg, Miss. Snaking logs *profitably* here calls for a machine with the power to pull heavy loads, the *traction* to wade through muck, the *maneuverability* to avoid damaging small growth and the *stamina* to keep working day after day.

J. V. Valentine is getting this kind of performance from his Cat* D6 Tractors. He's using four of his ten on this operation. Production per 10-hour day averages 50,000 bd. ft. Two D6s snake out logs on a haul averaging ¼ to ½ a mile from woods to landing. The others, with 'dozers, pile logs for loading and maintain the road so trucks can get in.

With a maximum drawbar pull of 18,700 pounds in first gear, these rugged yellow rigs take all their chores in stride. Long, wide, deep-grousered tracks provide sure-gripping traction. Positive sealing of track rollers and idlers keeps mud out and oil in for longer life. And low-effort steering gives the operator complete control of each track for full, smooth power on sharp turns. All these and many other advantages add up to *more* work with *less* down time at *lower* cost than any competitive unit!

Your Caterpillar Dealer backs every Caterpillar-built rig with genuine parts and fast service—wherever and whenever you want it. Ask him to show you how these husky workers can pay off for you. He'll be glad to *demonstrate* on your job!

Caterpillar Tractor Co., Peoria, Illinois.

CATERPILLAR*

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NAME THE DATE... YOUR DEALER WILL DEMONSTRATE